

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 p 1  
Edition : 31.08.90  
Replaces : 8.9.89  
Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump  
Pump designation : PES6A95D32ORS2693Z  
EP type number : 0 410 896 913  
Governor  
Governor design. : RQ300/1300AB1204R  
Governor no. : 0 420 20 640

Customer-spec. information  
Customer : DAF

Engine : DNS 620

1st version kW : 150.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.60...11.80  
2nd speed rpm : 850  
Rack travel in m: 13.00...13.40  
3rd speed rpm : 935  
Rack travel in m: 12.70...13.10  
4th speed rpm : 1080  
Rack travel in m: 11.90...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 290  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 265  
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 65.5...66.5  
1000 s: (63.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

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When adjusting the governor, observe  
service information on microcard  
W-400/008/D15



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 w 3  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 578  
 Injection pump  
 Pump designation : PES6A95D320RS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1200AB1236-7R  
 Governor no. : 0 420 213 119

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

A03

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 1.7...2.1  
 100 s: (1.5...2.3)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.60...9.00  
 2nd speed rpm : 1250  
 travel mm : 7.30...7.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 900  
 Del.quantity : 101.5...103.5  
 1000 : (99.5...105.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1230...1260  
2nd rack travel in: 4.00  
Speed rpm : 1385...1395  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 225  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 500  
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 73.0...77.0  
1000 s: (71.0...79.0)

BREAKAWAY

A04

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1815517C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 y  
Edition : 05.10.90  
Replaces : 8.6.90  
Test oil : ISO-4113  
Combination no. : 0 400 846 579  
Injection pump  
Pump designation : PES6A95D320RS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RQV350...1350AB1248R  
Governor no. : 0 420 21J 120

Customer spec. information  
Customer : NAVISTAR

Engine : DT 360

1st version kW : 126.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 240  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 445  
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.5...65.5  
1000 s: (59.5...67.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1816726C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 s  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 582  
  
Injection pump  
Pump designation : PES6A95D32ORS2796  
EP type number : 0 410 896 901  
Governor  
Governor design. : RQ300/1300AB1253-2R  
Governor no. : 0 420 20. 653

Customer-spec. information  
Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50

A07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 83.5...84.5

1000 : (81.5...86.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 11.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

### Testing:

Speed rpm : 200  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 545...585

### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.20...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.50  
3rd speed rpm : 960  
Rack travel in m: 13.30...13.90  
4th speed rpm : 1055  
Rack travel in m: 12.40...13.20

### Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 280  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.90...12.10

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1290  
Del.quantity cm3/ : 85.0...87.0  
1000 s: (82.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 57.5...58.5  
1000 s: (55.5...60.5)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1320...1330

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 p 3  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 583  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RQ300/1300AB1253R  
 Governor no. : 0 420 20. 649

Customer-spec. information  
 Customer : DAF

Engine : NS 156

1st version kW : 156.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1000

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 85.5...86.5

1000 : (83.5...88.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 1000

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.90  
Speed rpm : 1325...1340  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 200  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 530...570

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1280  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

Aneroid/Altitude

Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 250  
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 53.5...54.5  
1000 s: (51.5...56.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

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# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 p 4  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 585  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RQ300/1300AB1253-1R  
 Governor no. : 0 420 20. 650

Customer-spec. information  
 Customer : DAF

Engine : NT 133

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 11.20...11.30  
 Del.quantity cm3/ : 7.1...7.2  
 100 s: (6.9...7.4)  
 Spread cm3 : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm3/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 800  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 71.5...72.5  
 1000 : (69.5...74.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 20.0  
 Testing:  
 1st rack travel in: 9.50

Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 540...580

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.40...10.60  
2nd speed rpm : 900  
Rack travel in m: 11.50...11.60  
3rd speed rpm : 1000  
Rack travel in m: 11.00...11.40  
4th speed rpm : 1070  
Rack travel in m: 10.60...10.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 255  
Rack travel in m: 10.70...10.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1290

Del.quantity cm<sup>3</sup>/ : 71.0...73.0  
1000 s: (68.5...75.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 50.5...51.5  
1000 s: (48.5...53.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 z  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 587  
  
Injection pump  
Pump designation : PES6A95D320RS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RQV350...1350AB1251R  
Governor no. : 0 420 213 122

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1405...1435  
2nd rack travel in: 4.00  
Speed rpm : 1540...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 1175  
Rack travel in m: 12.50...12.70  
4th speed rpm : 1050  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 220  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

START CUT-OUT

Speed 1/min : 270 (280)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm3/ : 98.0...102.0  
1000 s: (96.0...104.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.0...71.0  
1000 s: (65.0...73.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1405...1435

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1817191C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 2,1 c  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 862 002  
  
Injection pump  
Pump designation : PES2A90D320/3RS2794  
EP type number : 0 410 892 001  
Governor  
Governor design. : RSV300...1000A7C505R  
Governor no. : 0 420 233 188

Customer-spec. information  
Customer : MWM

Engine : D226B-2

1st version kW : 25.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 2

Phasing : 0-90

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0  
Rack travel in mm : 7.5...7.7  
Del.quantity cm3/ : 1.2...1.8  
100 s: (1.0...2.0)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 85.0...86.0  
1000 : (83.0...88.0)  
Spread cm3 : 3.00  
1000 : (5.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,1 b 3  
Edition : 05.10.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 863 018  
Injection pump  
Pump designation : PES3A90D320/3RS2658  
EP type number : 0 410 893 004  
Governor  
Governor design. : RSV300...1000A7C505R  
Governor no. : 0 420 23J 188

Customer-spec. information  
Customer : MWM

Engine : D226B-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 0.9...1.6  
100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Del.quantity : 85.0...86.0

1000 : (83.0...88.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 10.00

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1055...1085  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 500  
Rack travel in m: 11.00...11.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set



Note remarks

Combination no. : 0 400 864 076

Engine : TD224/04

```
Prestroke mm      : 2.95...3.05
                   : (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order      : 1- 3- 4- 2
```

Testing:  
1st rack travel in: 10.50

Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
3rd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1505  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 890  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 185  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 90  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 185  
Speed rpm : 500  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (76.5...83.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 61.0...63.0  
1000 s: (59.0...65.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 132.0...142.0  
1000 s: (129.0...145.0)  
Rack travel in mm : 19.50...21.00

Remarks:

: STILL

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 j  
Edition : 21.09.90  
Replaces : 5.3.90  
Test oil : ISO-4113

Combination no. : 0 400 864 077

Injection pump  
Pump designation : PES4A95D410/3RS2789  
EP type number : 0 410 894 995  
Governor  
Governor design. : RSV325...1150A5C2244

Governor no. : 0 420 232 536

Customer-spec. information  
Customer : KHD

Engine : F4L913

1st version kw : 68.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0  
Rack travel in mm : 8.3...8.5  
Del.quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.8)

Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1240...1250

3rd rack travel in: 4.00

Speed rpm : 1250...1280  
4th rack travel in: 1415  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever

position degrees: 63...71

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.80...12.90

2nd speed rpm : 500

Rack travel in m: 13.20...13.30

4th speed rpm : 1070

Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750

Del.quantity cm3/ : 88.5...91.5

1000 s: (86.0...94.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 125.0...135.0

1000 s: (122.0...138.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 4,1 b 4  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 864 080  
Injection pump  
Pump designation : PES4A90D320/3RS2659  
EP type number : 0 410 894 028  
Governor  
Governor design. : RSV300...1000A7C505R  
Governor no. : 0 420 23J 188

Customer-spec. information  
Customer : MWM

Engine : D226B-4

1st version kW : 54.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00

A23

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 8.8...8.9  
100 s: (8.6...9.1)

Spread cm3 : 0.3  
100 s: (0.5)

2nd speed rpm : 300.0  
Rack travel in mm : 7.5...7.7  
Del.quantity cm3/ : 1.2...1.8  
100 s: (1.0...2.0)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 88.5...89.5  
1000 : (86.5...91.5)  
Spread cm3 : 3.00  
1000 : (5.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 o 6  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 864 081

Injection pump  
 Pump designation : PES4A85D410/3RS2799  
 EP type number : 0 410 884 944  
 Governor  
 Governor design. : RSV325...1250A2C2253  
 Governor no. : 0 420 232 547

Customer-spec. information  
 Customer : KHD

Engine : BF4L913

1st version kW : 78.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 8.7...8.8  
 100 s: (8.5...9.0)

Spread cm3 : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.8...8.0  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.8...1.8)

Spread cm3 : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 700  
 Del.quantity : 87.5...88.5  
 1000 : (85.5...90.5)

Spread cm3 : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 99...107

Testing:  
 1st rack travel in: 11.40  
 Speed rpm : 1290...1300  
 2nd rack travel in: 4.00  
 Speed rpm : 1370...1400

3rd rack travel in: 4.00  
Speed rpm : 1395...1425  
4th rack travel in: 1560  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
4th speed rpm : 1010  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 280  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 62.0...64.0  
1000 s: (60.0...66.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 17.60...18.00

Remarks:

#### APPLICATION

Wheel loader

Excavator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 k  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 082  
 Injection pump  
 Pump designation : PES4A85B410/3RS2799  
 EP type number : 0 410 884 944  
 Governor  
 Governor design. : RS325/1250A0C2254L  
 Governor no. : 0 420 220 011

Customer-spec. information  
 Customer : KHD

Engine : BF4L913

1st version kW : 78.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 400.0

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1250

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 81...89

## Testing:

1st rack travel in: 11.40

Speed rpm : 1250...1300

2nd rack travel in: 4.00

Speed rpm : 1370...1400

4th rack travel in: 1450

Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever

position degrees: ?

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.80...13.00  
4th speed rpm : 1000  
Rack travel in m: 12.50...12.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 390  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 280  
Rack travel in m: 11.90...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 89.0...91.0  
1000 s: (86.5...93.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 62.5...63.5  
1000 s: (60.5...65.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40

Speed rpm : 1250...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,7 c 1  
Edition : 11.10.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 865 023

Injection pump  
Pump designation : PES5A80D410/3RS2603  
EP type number : 0 410 885 008  
Governor  
Governor design. : RS325/1650AOC2087L  
Governor no. : 0 420 220 003

Customer-spec. information  
Customer : KHD

Engine : F5L912

1st version kW : 62.5  
Rated speed : 3300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)  
Rack travel in mm : 9.00...12.00

B01

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

## BASIC SETTING

1st speed rpm : 1490

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 5.0...5.1

100 s: (4.9...5.3)

Spread cm3 : 0.2

100 s: (0.35)

2nd speed rpm : 325  
Rack travel in mm : 8.70...8.90  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.5...2.2)  
Spread cm3 : 0.2  
100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1490  
Del.quantity : 50.5...51.5  
1000 : (49.0...53.0)  
Spread cm3 : 2.0  
1000 : (3.5)

## RATED SPEED

1st version  
Control lever  
position degrees: 95...103

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1690...1700  
2nd rack travel in: 4.00  
Speed rpm : 1740...1770  
4th rack travel in: 1900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100  
Minimum rack trave: 10.80  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.50  
Speed rpm : 450...490

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.90  
Speed rpm : 1000...1700

Remarks:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 5,1 i  
Edition : 21.05.90  
Replaces : 1.2.90  
Test oil : ISO-4113

Combination no. : 0 400 865 025

Injection pump  
Pump designation : PESSA80D410/3RS2782  
EP type number : 0 410 885 999  
Governor  
Governor design. : RSV325...1250A5C2239

Governer no. : 0 420 232 526

Customer-spec. information  
Customer : KHD

Engine : F5L912

1st version kW : 68.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1235

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 6.9...7.0

100 s: (6.8...7.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0  
Rack travel in mm : 7.4...7.6  
Del.quantity cm3/ : 0.8...1.4  
100 s: (0.6...1.5)

Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1235

Del.quantity : 69.5...70.5

1000 : (68.0...72.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.80

Speed rpm : 1275...1285

2nd rack travel in: 4.00

Speed rpm : 1330...1360

3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1  
Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1235  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 54.5...56.5  
1000 s: (52.5...58.5)  
Speed rpm : 1000  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (61.0...67.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1275...1285

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm3/ : 8.0...14.0  
1000 s: (6.5...15.5)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 5,1 i 1  
 Edition : 31.8.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 865 026

Injection pump  
 Pump designation : PES5A85D410/3RS2782  
 EP type number : 0 410 885 999  
 Governor  
 Governor design. : RSV325...900A4C2239-2L  
 Governor no. : 0 420 232 538

Customer-spec. information  
 Customer : KHD

Engine : F5L912F

1st version kW : 42.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 5.1...5.2  
 100 s : (4.9...5.4)

Spread cm3 : 0.3  
 100 s : (0.5)

2nd speed rpm : 325  
 Rack travel in mm : 7.40...7.60  
 Del.quantity cm3/ : 1.0...1.6  
 100 s : (0.8...1.8)

Spread cm3 : 0.25  
 100 s : (0.45)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 710  
 Del.quantity : 51.5...52.5  
 1000 : (49.5...54.5)

Spread cm3 : 3.0  
 1000 : (5.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.40  
 Speed rpm : 752...757  
 2nd rack travel in: 4.00  
 Speed rpm : 798...813  
 4th rack travel in: 945  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 76...84

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.50

Testing:

Speed rpm : 100

Minimum rack trave: 18.50

Speed rpm : 325

Rack travel in mm : 5.40...5.60

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 103.0...113.0

1000 s: (100.0...116.0)

Rack travel in mm : 19.30...19.70

LOW IDLE

Speed rpm : 325

Rack travel in mm : 7.40...7.60

Del.quantity cm3/ : 10.0...16.0

1000 s: (8.0...18.0)

Spread cm3 : 2.5

1000 s: (4.5)

Remarks:

APPLICATION

Generator set



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 5,9 f 5  
 Edition : 21.09.90  
 Replaces : 27.3.87  
 Test oil : ISO-4113

Combination no. : 0 400 866 109

Injection pump  
 Pump designation : PES6A90D210RS2629  
 EP type number : 0 410 896 075  
 Governor  
 Governor design. : RSV350...1300AOC2139  
 L  
 Governor no. : 0 420 232 374

Customer-spec. information  
 Customer : FORD/GB

Engine : 380

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 7.2...7.3

100 s: (7.0...7.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.5

Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1250

Del.quantity : 72.0...73.0

1000 : (70.0...75.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 115...123

### Testing:

1st rack travel in: 11.90

Speed rpm : 1365...1375

2nd rack travel in: 4.00

Speed rpm : 1480...1510

3rd rack travel in: 4.00

Speed rpm : 1500...1530

4th rack travel in: 1670

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 28...36

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 500...560

Speed rpm : 650

Maximum rack trave: 1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 76.0...90.0

1000 s: (73.0...93.0)

Rack travel in mm : 19.00...21.00

Remarks:

:

At start of delivery, locating pin  
must latch into slit in pointer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a63  
Edition : 17.09.90  
Replaces : 9.7.90  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 132  
  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV500...1250AOC2190  
-28R  
Governor no. : 0 420 233 231

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT-I 8.3ltr.  
  
1st version kW : 139.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 047  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 017  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,6  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

B09

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  

---

Rack travel in mm : 11.40...11.50  

---

Del.quantity cm3/ : 10.1...10.3  
100 s: (9.9...10.5)  

---

Spread cm3 : 0.4  
100 s: (0.6)  

---

2nd speed rpm : 500.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 1.3...1.7  
100 s: (1.0...1.9)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 101.5...103.5  
1000 : (99.5...105.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:

1st rack travel in: 10.40  
Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1365...1375  
3rd rack travel in: 4.00  
Speed rpm : 1365...1395  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.50...5.70

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1315...1325

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915687

Start of delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 L 7  
Edition : 05.10.90  
Replaces : 2.5.89  
Test oil : ISO-4113

Combination no. : 0 400 866 139

Injection pump  
Pump designation : PES6A100D320/3RS2763  
EP type number : 0 410 806 006  
Governor  
Governor design. : RSV400...1250AOC2190  
-39R  
Governor no. : 0 420 233 245

Customer-spec. information  
Customer : CDC

Engine : 6 CT 8.3 ltr

1st version kW : 114.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 457 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.40...9.50

Del. quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.4...5.6  
Del. quantity cm3/ : 1.9...2.3  
100 s: (1.6...2.5)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del. quantity : 86.0...88.0  
1000 : (84.0...90.0)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:

1st rack travel in: 8.40  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
3rd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 750  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 84.5...88.5  
1000 s: (82.5...90.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3914764

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 v 2  
Edition : 21.09.90  
Replaces : 31.7.90  
Test oil : ISO-4113

Combination no. : 0 400 866 143

Injection pump  
Pump designation : PES6A95D120RS2773  
EP type number : 0 410 896 904  
Governor  
Governor design. : RSV350...1250A0C2237  
R  
Governor no. : 0 420 233 240

Customer-spec. information  
Customer : CUMMINS

Engine : 6BT

1st version kw : 118.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20  
(2.05...2.25)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.40...9.50

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s : (8.3...9.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 6.1...6.3  
Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s : (0.7...1.8)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 86.0...88.0  
1000 : (83.5...90.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91...99

Testing:  
1st rack travel in: 8.40  
Speed rpm : 1290...1300

2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 465...525

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 69.5...72.5  
1000 s: (67.5...74.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 107.0...117.0  
1000 s: (104.0...120.0)  
Rack travel in mm : 13.30...13.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 u  
Edition : 31.08.90  
Replaces : 21.5.90  
Test oil : ISO-4113  
  
Combination no. : 0 400 866 152  
  
Injection pump  
Pump designation : PES6A85D410/3RS2783  
EP type number : 0 410 886 893  
Governor  
Governor design. : RSV325...1250A5C2239  
Governor no. : 0 420 232 526

Customer-spec. information  
Customer : KHD

Engine : F6L912F

1st version kW : 82.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1235

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 6.9...7.0

100 s: (6.7...7.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1235

Del.quantity : 69.5...70.5

1000 : (67.5...72.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.80

Speed rpm : 1275...1285

2nd rack travel in: 4.00

Speed rpm : 1330...1360

3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1  
Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1235  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 55.5...57.5  
1000 s: (53.0...60.0)  
Speed rpm : 1000  
Del.quantity cm3/ : 64.0...66.0  
1000 s: (61.5...68.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1275...1285

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 8.40...8.60  
Del.quantity cm3/ : 8.0...14.0  
1000 s: (6.0...16.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 p  
Edition : 05.10.90  
Replaces : 1.2.90  
Test oil : ISO-4113

Combination no. : 0 400 866 153

Injection pump  
Pump designation : PES6A100D320/3RS2763  
EP type number : 0 410 806 006  
Governor  
Governor design. : RSV400...950AOC2238-  
1R  
Governor no. : 0 420 233 255

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 145.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 3.2...3.6

100 s: (3.0...3.8)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 122.0...124.0

1000 : (120.0...126.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.90...7.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 220  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 340  
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 990...1000

B18

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 32.5...36.5  
1000 s: (30.5...38.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C # 3917577

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 u 1  
 Edition : 31.8.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 162  
 Injection pump  
 Pump designation : PES6A85D410/3RS2783  
 EP type number : 0 410 886 893  
 Governor  
 Governor design. : RSV325...900A4C2239-2L  
 Governor no. : 0 420 232 538

Customer-spec. information  
 Customer : KHD

Engine : F5L912F

1st version kW : 51.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 313 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 ((0.75))

## BASIC SETTING

1st speed rpm : 710

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 5.1...5.2

100 s: (4.9...5.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325  
 Rack travel in mm : 7.40...7.60  
 Del.quantity cm3/ : 0.9...1.5  
 100 s: (0.7...1.7)  
 Spread cm3 : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 710  
 Del.quantity : 51.5...52.5  
 1000 : (49.5...54.5)  
 Spread cm3 : 3.0  
 1000 : (5.0)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.400  
 Speed rpm : 752...757  
 2nd rack travel in: 4.00  
 Speed rpm : 798...813  
 4th rack travel in: 945  
 Speed rpm : 0.30...0.70

LOW IDLE 1

Control lever

position degrees: 76...84

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.50

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 370...430

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 103.0...113.0

1000 s: (100.0...116.0)

Rack travel in mm : 19.20...19.70

LOW IDLE

Speed rpm : 325

Rack travel in mm : 7.40...7.60

Del.quantity cm<sup>3</sup>/ : 9.0...15.0

1000 s: (7.0...17.0)

Spread cm<sup>3</sup> : 2.5

1000 s: (4.5)

Remarks:

APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 6,2 e11  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 166  
 Injection pump  
 Pump designation : PES6A90D320/3RS2660  
 EP type number : 0 410 896 078  
 Governor  
 Governor design. : RSV300...1000A7C505R  
 Governor no. : 0 420 23J 188

Customer-spec. information  
 Customer : MWM

Engine : D226B-6

1st version kW : 139.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : (0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.5...7.7  
 Del.quantity cm3/ : 1.2...1.8  
 100 s: (1.0...2.0)  
 Spread cm3 : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 85.0...86.0

1000 : (83.0...88.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a83  
Edition : 05.10.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 866 167

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100AOC2190  
-50R  
Governor no. : 0 420 233 276

Customer-spec. information  
Customer : C.D.C

Engine : 6 CT 8

1st version kW : 138.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.5...2.3)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 109.5...111.5  
1000 : (107.5...113.5)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 127.5...131.5  
1000 s: (125.5...133.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3919497

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a84  
Edition : 05.10.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 866 168

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A0C2190  
-52R  
Governor no. : 0 420 233 278

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.5...2.3)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 127.0...129.0

1000 : (125.0...131.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 16.20...16.40

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3917456

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a 9  
Edition : 31.07.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 874 238 C  
  
Injection pump  
Pump designation : PES4A95D410RS2685  
EP type number : 0 410 894 996  
Governor  
Governor design. : RSV400...1000A1C2187  
L  
Governor no. : 0 420 232 387

Customer spec. information  
Customer : LIEBHERR

Engine : D904 T

1st version kW : 100.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
: (2.65...2.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.20...14.30

Del. quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 6.3...6.5  
Del. quantity cm3/ : 1.0...1.6  
100 s: (0.7...1.8)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 137.0...139.0  
1000 : (135.0...141.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 90...98

Testing:

1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1245  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 500  
Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 129.5...132.5  
1000 s: (127.0...135.0)  
Speed rpm : 750  
Del.quantity cm3/ : 134.0...137.0  
1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a10  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238 K  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 TB

1st version kW : 74.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 137.0...139.0  
 1000 : (135.0...141.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:

1st rack travel in: 9.20  
Speed rpm : 1020...1040  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 720  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 82.5...85.5  
1000 s: (80.0...88.0)  
Speed rpm : 700  
Del.quantity cm3/ : 91.0...94.0  
1000 s: (88.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1020...1040

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a11  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238L  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 100.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1245  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 500  
Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 129.5...132.5  
1000 s: (127.0...135.0)  
Speed rpm : 750  
Del.quantity cm3/ : 134.0...137.0  
1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a12  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 874 238N

Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 TB

1st version kW : 74.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 980

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Rack travel in mm : 11.10...11.20

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Del.quantity cm3/ : 9.8...10.0

---

100 s: (9.6...10.2)

---

Spread cm3 : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del.quantity : 98.5...100.5  
 1000 : (96.5...102.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:

1st rack travel in: 10.10  
Speed rpm : 1020...1041  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 760  
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 93.0...96.0  
1000 s: (90.5...98.5)  
Speed rpm : 700  
Del.quantity cm3/ : 101.5...104.5  
1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1020...1041

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a13  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238N  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 94.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del.quantity : 127.0...129.0

1000 : (125.0...131.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 90...98

Testing:

1st rack travel in: 12.00  
Speed rpm : 1020...1040  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 500  
Rack travel in m: 13.40...13.50  
3rd speed rpm : 825  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 132.5...135.5  
1000 s: (130.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1020...1040

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

C08

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 8,4 a 4  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 3220  
 Injection pump  
 Pump designation : PES6A95D410RS2689  
 EP type number : 0 410 896 916  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906 T

1st version kW : 150.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.10...13.20

Del. quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 127.0...129.0  
 1000 : (125.0...131.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

Testing:

1st rack travel in: 12.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1245  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 515...575

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 119.5...122.5  
1000 s: (117.0...125.0)  
Speed rpm : 800  
Del.quantity cm3/ : 125.5...128.5  
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 8,4 a 5  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 322D  
 Injection pump  
 Pump designation : PES6A95D41ORS2689  
 EP type number : 0 410 896 916  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906 TB

1st version kW : 120.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.50

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del.quantity : 102.0...104.0  
 1000 : (100.0...106.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 89...97

Testing:

1st rack travel in: 10.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 500  
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm3/ : 105.5...108.5  
1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 w 1  
Edition : 17.09.90  
Replaces : 28.9.89  
Test oil : ISO-4113

Combination no. : 0 400 876 350

Injection pump  
Pump designation : PES6A100D410RS2754  
EP type number : 0 410 806 002  
Governor  
Governor design. : RSV425...1100A2C2234  
L  
Governor no. : 0 420 232 498

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.8...6.0  
Del.quantity cm<sup>3</sup>/ : 2.6...3.0  
100 s: (2.4...3.2)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 100.5...102.5  
1000 : (98.5...104.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control Lever  
position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE29182

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 w 2  
 Edition : 17.09.90  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 351  
 Injection pump  
 Pump designation : PES6A100D410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100A2C2234  
 -1L  
 Governor no. : 0 420 232 499

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 TRW01

1st version kW : 106.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

C15

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 2.6...3.0  
 100 s: (2.4...3.2)  
 Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 700  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 110.5...113.5  
1000 s: (108.0...116.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE29303

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 w 4  
Edition : 17.09.90  
Replaces : 2.5.89  
Test oil : ISO-4113

Combination no. : 0 400 876 354

Injection pump  
Pump designation : PES6A100D410RS2754  
EP type number : 0 410 806 002  
Governor  
Governor design. : RSV425...1100A2C2235  
L  
Governor no. : 0 420 232 511

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076TRW06

1st version kW : 98.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm3/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 83.5...85.5

1000 : (81.5...87.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 650  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 103.0...106.0  
1000 s: (100.5...108.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE36069

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 d 2  
Edition : 17.09.90  
Replaces : 6.3.90  
Test oil : ISO-4113

Combination no. : 0 400 876 360

Injection pump  
Pump designation : PES6A100D410RS2762  
EP type number : 0 410 806 003  
Governor  
Governor design. : RSV425...1100A2C2225  
Governor no. : 9 420 234 176

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076ARW-06

1st version kW : 146.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 11.80...11.90

---

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

---

100 s: (11.2...11.8)

---

Spread cm<sup>3</sup> : 0.4

---

100 s: (0.6)

---

2nd speed rpm : 425.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 114.0...116.0  
1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

### Testing:

1st rack travel in: 10.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 650  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.70...13.90

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.30...13.70

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 147.5...150.5  
1000 s: (145.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (126.0...136.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1140...1150

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

### Remarks:

: JOHN DEERE # RE29298

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

The stop position of the control rod  
must be easily reached with the stop  
lever

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 e 1  
Edition : 17.09.90  
Replaces : 8.8.90  
Test oil : ISO-4113

Combination no. : 0 400 876 372

Injection pump  
Pump designation : PES6A100D410RS2764-1  
EP type number : 0 410 806 007  
Governor  
Governor design. : RSV600...1100A2C2161  
-7L  
Governor no. : 0 420 232 540

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466AZ003

1st version kW : 164.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 190...200

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
(2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever  
position degrees: 37...45

Testing:

1st rack travel in: 12.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 6.00...6.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.30...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : 175  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 280  
Rack travel in m: 12.10...12.50  
3rd pressure hPa : 900  
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 68.0...72.0  
1000 s: (66.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 600  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE44661  
Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

The stop position of the control rod  
must be easily reached with the stop  
lever

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 e 2  
Edition : 17.09.90  
Replaces : 9.7.90  
Test oil : ISO-4113

Combination no. : 0 400 876 373

Injection pump  
Pump designation : PES6A100D410RS2764-1  
EP type number : 0 410 806 007  
Governor  
Governor design. : RSV600...1100A2C2161  
-8L  
Governor no. : 0 420 232 541

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466AZ004

1st version kW : 150.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 190...200

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.7...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 117.5...119.5

1000 : (115.5...121.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.40  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00  
Speed rpm : 1220...1230  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 6.30...6.50

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.60...9.80

Measurement

Speed 1/min : 500

1st pressure hPa : 95  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 200  
Rack travel in m: 12.60...13.00  
3rd pressure hPa : 900  
Rack travel in m: 14.00...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 140.5...144.5  
1000 s: (138.5...146.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 70.5...74.5  
1000 s: (68.5...76.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 600  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (17.0...25.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE44662  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

The stop position of the control rod  
must be easily reached with the stop  
lever

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 a  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 375  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300A0C2248  
 -2R  
 Governor no. : 0 420 233 272

Customer-spec. information  
 Customer : DAF

Engine : NT 119

1st version kW : 119.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 103...111

Testing:

1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 1025  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm3/ : 68.0...70.0  
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 q 1  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 375  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2251  
 R  
 Governor no. : 0 420 233 272

Customer-spec. information  
 Customer : DAF

Engine : NT 119

1st version kW : 119.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 103...111

Testing:

1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 950  
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 68.0...70.0  
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 r  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 376  
  
Injection pump  
Pump designation : PES6A95D320RS2796  
EP type number : 0 410 896 901  
Governor  
Governor design. : RSV300...1300A0C2248  
-1R  
Governor no. : 0 420 233 273

Customer-spec. information  
Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 7.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 83.5...84.5

1000 : (81.5...86.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 100...108

Testing:

1st rack travel in: 11.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 13.50...13.60  
4th speed rpm : 1080  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 280  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 85.0...87.0  
1000 s: (82.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 57.5...58.5  
1000 s: (55.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1320...1330

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 q 2  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 377  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -1R  
 Governor no. : 0 420 233 273

Customer-spec. information  
 Customer : DAF

Engine : NS156

1st version kW : 156.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 85.5...86.5

1000 : (83.5...88.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 101...109

Testing:

1st rack travel in: 10.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1395...1425  
3rd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1590  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 1300  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 250  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 53.5...54.5  
1000 s: (51.5...56.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 q 3  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 378  
 Injection pump  
 Pump designation : PES6A95D320RS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -2R  
 Governor no. : 0 420 233 274

Customer-spec. information  
 Customer : DAF

Engine : NT 133

1st version kW : 133.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 103...111

Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.60  
4th speed rpm : 1045  
Rack travel in m: 10.90...11.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 250  
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700

Speed rpm : 1290  
Del.quantity cm3/ : 73.0...75.0  
1000 s: (70.5...77.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 50.5...51.5  
1000 s: (48.5...53.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,0 k 1  
Edition : 14.09.90  
Replaces : 12.9.86  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 455  
  
Injection pump  
Pump designation : PE6P110A32ORS367Y  
EP type number : 0 411 816 132  
Governor  
Governor design. : RQV250...1000PA394  
Governor no. : 0 421 813 241

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TMD 70 C

1st version kW : 154.5  
Rated speed : 2000

## TEST PENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 8.5...8.7

100 s: (8.2...9.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 700

Del.quantity : 85.0...87.0

1000 : (82.0...90.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.70

Speed rpm : 1050...1060

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 4.8

Testing:

Speed rpm : 100

Minimum rack trave: 6.50

Speed rpm : 250

Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00

Speed rpm : 350...410

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 165.0...200.0

1000 s: (161.0...204.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 x2  
Edition : 08.06.90  
Replaces : 16.2.90  
Test oil : ISO-4113

Combination no. : 0 401 846 540

Injection pump  
Pump designation : PE6P110A320RS407-1  
EP type number : 0 411 816 147  
Governor  
Governor design. : RQ275/1000PA861  
Governor no. : 0 421 80 397

Customer-spec. information  
Customer : DAF

Engine : LT 195

1st version kW : 195.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 15.3...15.5

100 s: (15.0...15.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.5...157.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1300

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100

Minimum rack travel: 8.40

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.50

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 12.40...12.50

2nd speed rpm : 600

Rack travel in m: 13.00...13.20

3rd speed rpm : 900

Rack travel in m: 12.50...12.80

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 340

Rack travel in m: 12.50...12.60

3rd pressure hPa : 310

Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 980

Del.quantity cm3/ : 146.5...148.5

1000 s: (142.5...152.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 130.0...132.0

1000 s: (127.5...134.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...260.0

1000 s: (216.0...264.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 x5  
 Edition : 10.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 540Z  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA861  
 Governor no. : 0 421 80 397

Customer-spec. information  
 Customer : DAF

Engine : LT 195 MBG

1st version kW : 195.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.5...157.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1300

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100

Minimum rack trave: 8.40

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.50

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 12.40...12.50

2nd speed rpm : 600

Rack travel in m: 13.00...13.20

3rd speed rpm : 900

Rack travel in m: 12.50...12.80

#### Aneroid/Altitude

##### Compensator Test

#### 1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.20...11.40

2nd pressure hPa : 240

Rack travel in m: 12.50...12.60

3rd pressure hPa : 190

Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 980

Del.quantity cm3/ : 146.5...148.5

1000 s: (142.5...152.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 115.5...117.5

1000 s: (113.0...120.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...260.0

1000 s: (216.0...264.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 x3  
 Edition : 19.06.90  
 Replaces : 2.6.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 541  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1100PA864  
 Governor no. : 0 421 80 400

Customer-spec. information  
 Customer : DAF

Engine : LT 210

1st version kW : 210.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 15.5...15.7

100 s: (15.2...15.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm3/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 700  
 Del.quantity : 155.0...157.0  
 1000 : (152.5...159.5)  
 Spread cm3 : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version

Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1135...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1180...1210  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100

Minimum rack trave: 8.40

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 12.50...12.60

2nd speed rpm : 600

Rack travel in m: 13.10...13.30

3rd speed rpm : 850

Rack travel in m: 12.80...12.90

Aneroid/Altitude

Compensator Test

#### 1st version

##### Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.90...13.00

##### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 310

Rack travel in m: 12.60...12.70

3rd pressure hPa : 270

Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 1080

Del.quantity cm3/ : 148.0...150.0

1000 s: (144.0...154.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 130.0...132.0

1000 s: (127.5...134.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1135...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 e2  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 552  
  
Injection pump  
Pump designation : PE6P100A820LS503  
EP type number : 0 411 806 197  
Governor  
Governor design. : RQ250/1000PA352-1  
Governor no. : 0 421 80 412

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AZ

1st version kW : 155.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.85...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.20

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.6

Testing:

1st rack travel in: 12.70

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 700  
Rack travel in m: 14.40...14.80  
3rd speed rpm : 825  
Rack travel in m: 13.90...14.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 y9  
Edition : 29.06.90  
Replaces : 2.9.88  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 556  
  
Injection pump  
Pump designation : PE6P120A32ORS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RQ250/1100PA417-10  
Governor no. : 0 421 80 445

Customer-spec. information  
Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650  
  
Rack travel in mm : 11.10...11.20  
  
Del.quantity cm3/ : 17.1...17.3  
100 s: (16.8...17.6)  
  
Spread cm3 : 0.5  
100 s: (0.9)  
  
2nd speed rpm : 250.0  
Rack travel in mm : 6.7...6.9  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 700  
Del.quantity : 171.0...173.0  
1000 : (168.0...176.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 550  
Rack travel in mm : 15.8

### Testing:

1st rack travel in: 9.10  
Speed rpm : 1135...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.20

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...480

#### TORQUE CONTROL

Dimension a mm : 0.68

Torque control curve - 1st version

1st speed rpm : 1090

Rack travel in m: 10.10...10.20

2nd speed rpm : 650

Rack travel in m: 11.40...11.60

3rd speed rpm : 750

Rack travel in m: 11.00...11.20

4th speed rpm : 825

Rack travel in m: 10.60...10.90

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 290

Rack travel in m: 10.70...10.90

3rd pressure hPa : 260

Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 1090

Del.quantity cm3/ : 159.0...161.0

1000 s: (155.0...165.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 129.0...131.0

1000 s: (126.0...134.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1135...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 320.0...360.0

1000 s: (320.0...360.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 a3  
 Edition : 14.09.90  
 Replaces : 23.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CX

1st version kW : 228.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 650  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 380  
Rack travel in m: 8.40...8.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 x6  
 Edition : 31.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 564  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/900PA818-2  
 Governor no. : 0 421 80 519

Customer-spec. information  
 Customer : DAF

Engine : LT 156

1st version kW : 156.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 11.80...11.90  
 Del.quantity cm<sup>3</sup>/ : 13.4...13.6  
 100 s: (13.1...13.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 7.0...7.2  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Del.quantity : 134.0...136.0  
 1000 : (131.5...138.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 10.30  
 Speed rpm : 930...945  
 2nd rack travel in: 4.00  
 Speed rpm : 1015...1045  
 4th rack travel in: 1200  
 Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100

Minimum rack trave: 8.30

Speed rpm : 275

Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.50

Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.30...11.40

2nd speed rpm : 600

Rack travel in m: 12.40...12.60

3rd speed rpm : 675

Rack travel in m: 12.00...12.20

4th speed rpm : 725

Rack travel in m: 11.60...11.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 875

Del.quantity cm3/ : 118.5...122.5

1000 s: (115.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 930...945

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.00...7.20

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 h  
 Edition : 14.09.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113

Combination no. : 0 401 846 565

Injection pump  
 Pump designation : PE6P110A820LS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 80 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 R3AZ,R1AZ

1st version kW : 184.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.6

Testing:

1st rack travel in: 11.80

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1095...1125

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 13.30...13.70  
2nd speed rpm : 900  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.20  
2nd pressure hPa : 450  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 300  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 175.0...179.0  
1000 s: (173.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 m  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 566  
Injection pump  
Pump designation : PE6P110A32ORS526  
EP type number : 0 411 816 147  
Governor  
Governor design. : RQ275/1000PA818-3  
Governor no. : 0 421 801 534

Customer-spec. information  
Customer : DAF

Engine : LT 160 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 13.00...14.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.0...14.0  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 15.6...15.8

100 s: (15.3...16.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.8

Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.40...13.60  
2nd speed rpm : 600  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 825  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.20...14.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.70...12.90  
2nd pressure hPa : 290  
Rack travel in m: 13.90...14.00  
3rd pressure hPa : 260  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 980  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (132.0...142.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 122.0...124.0  
1000 s: (119.5...126.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 280.0...320.0  
1000 s: (276.0...324.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.40...7.80  
Del.quantity cm3/ : 22.0...27.0  
1000 s: (19.5...29.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 8  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 899  
 Injection pump  
 Pump designation : PE6P110A720RS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQ250/1200PA913-1  
 Governor no. : 0 421 80 536

Customer-spec. information  
 Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 12.4...12.6

100 s: (12.1...12.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 124.0...126.0

1000 : (121.5...128.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.50

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1450

Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.90...11.10  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

D28

Rack travel in mm : 5.20...5.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 7  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 899  
 Injection pump  
 Pump designation : PE6P110A72ORS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQ275/1200PA913-1  
 Governor no. : 0 421 80 549

Customer-spec. information  
 Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.50...12.60  
 Del.quantity cm<sup>3</sup>/ : 12.4...12.6  
 100 s: (12.1...12.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 124.0...126.0  
 1000 : (121.5...128.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1320...1350  
 4th rack travel in: 1450  
 Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel : 6.70  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 360

Rack travel in m: 12.10...12.20

3rd pressure hPa : 270

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 87.0...89.0

1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

E02

Rack travel in mm : 5.20...5.40

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 d  
Edition : 14.09.90  
Replaces : 13.10.89  
Test oil : ISO-4113

Combination no. : 0 401 846 900

Injection pump  
Pump designation : PE6P120A320RS3240  
EP type number : 0 411 826 786  
Governor  
Governor design. : RGV250...1025PA921-16  
Governor no. : 0 421 813 799

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD122FL

1st version kW : 298.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

E03

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 800

travel mm : 6.30...6.70

4th speed rpm : 1070

travel mm : 8.00...8.20

5th speed rpm : 1150

travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 251.0...253.0  
1000 : (248.0...256.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION  
Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 100  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 810  
Rack travel in m: 13.10...13.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 17.5...23.5  
1000 s: (15.0...25.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 d1  
Edition : 14.09.90  
Replaces : 13.10.89  
Test oil : ISO-4113

Combination no. : 0 401 846 901

Injection pump  
Pump designation : PE6P120A32ORS3240-1  
EP type number : 0 411 826 787  
Governor  
Governor design. : RQV250...950PA921-17  
Governor no. : 0 421 813 800

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD122FH

1st version kW : 269.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 2.20...2.80

3rd speed rpm : 750  
travel mm : 6.30...6.70

4th speed rpm : 995  
travel mm : 8.20...8.40

5th speed rpm : 1060  
travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1010

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION  
Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 90  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 470  
Rack travel in m: 12.10...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 5  
Edition : 17.05.90  
Replaces : 4.5.90  
Test oil : ISO-4113

Combination no. : 0 401 846 905

Injection pump  
Pump designation : PE6P110A72ORS3225Z  
EP type number : 0 411 816 762  
Governor  
Governor design. : RQ250/1200PA913  
Governor no. : 0 421 80 477

Customer-spec. information  
Customer : DAF

Engine : HT 168

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.0...12.2

100 s: (11.7...12.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0

1000 : (117.5...124.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.30

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1400

Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 395  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 320  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

E08

Rack travel in mm : 5.70...5.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p10  
Edition : 20.07.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 905  
  
Injection pump  
Pump designation : PE6P110A72ORS3225Z  
EP type number : 0 411 816 762  
Governor  
Governor design. : RQ250/1200PA913-1  
Governor no. : 0 421 80" 536

Customer-spec. information  
Customer : DAF

Engine : HT 168

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.0...12.2

100 s: (11.7...12.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0

1000 : (117.5...124.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

### Testing:

1st rack travel in: 11.30

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1400

Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...10.90

2nd pressure hPa : 395

Rack travel in m: 12.00...12.10

3rd pressure hPa : 320

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 83.5...85.5

1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

E10

Rack travel in mm : 5.70...5.90

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 9  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 905  
 Injection pump  
 Pump designation : PE6P110A720RS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ275/1200PA913-1  
 Governor no. : 0 421 80 549

Customer-spec. information  
 Customer : DAF

Engine : HT 168

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 12.0...12.2

100 s: (11.7...12.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0

1000 : (117.5...124.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.30

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1400

Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 5.8

Rack travel in mm : 5.70...5.90

Remarks:

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...10.90

2nd pressure hPa : 395

Rack travel in m: 12.00...12.10

3rd pressure hPa : 320

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm3/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 u2  
Edition : 20.07.90  
Replaces : 6.4.90  
Test oil : ISO-4113

Combination no. : 0 401 846 921

Injection pump  
Pump designation : PE6P110A32ORS3197  
EP type number : 0 411 816 752  
Governor  
Governor design. : RQV250...1100PA589  
Governor no. : 0 421 817 307

Customer-spec. information  
Customer : VME

Engine : TD102 KF

1st version kW : 200.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 2.5...2.9

100 s: (2.2...3.2)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 2.20...2.70

3rd speed rpm : 450  
travel mm : 3.70...4.10

4th speed rpm : 750  
travel mm : 6.30...6.70

5th speed rpm : 1160  
travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 180  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (143.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 127.0...129.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 e1  
 Edition : 14.09.90  
 Replaces : 23.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 922  
 Injection pump  
 Pump designation : PE6P120A320RS3176-3  
 EP type number : 0 411 826 793  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 CX

1st version kW : 221.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.6  
 Del.quantity cm3/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900

Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 500  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 190  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...135.0  
1000 s: (111.0...139.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 i  
Edition : 29.06.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 923  
Injection pump  
Pump designation : PE6P120A320RS3118  
EP type number : 0 411 826 726  
Governor  
Governor design. : RQV250...1100PA920-6  
Governor no. : 0 421 817 872

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : THD 102 KD

1st version kW : 250.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
: (2.55...2.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 500

travel mm : 4.10...4.70

3rd speed rpm : 800

travel mm : 6.30...6.70

4th speed rpm : 1140

travel mm : 7.70...7.90

5th speed rpm : 1230

travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0  
1000 : (219.0...227.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

#### CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.70...12.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 700  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 120  
Rack travel in m: 9.00...9.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...270.0  
1000 s: (225.0...275.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 q  
Edition : 10.08.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 927  
Injection pump  
Pump designation : PE6P110A72ORS3258  
EP type number : 0 411 816 771  
Governor  
Governor design. : RQ325/1200PA913-2  
Governor no. : 0 421 801 539

Customer-spec. information  
Customer : DAF

Engine : HT 168 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 12.50...13.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
& maximum rack tra: 12.5...13.5  
Difference ° CS : 1.50...3.00

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 12.90...13.00  
Del.quantity cm3/ : 12.3...12.5  
100 s: (12.1...12.8)  
Spread cm3 : 0.4  
100 s: (0.7)

2nd speed rpm : 325.0  
Rack travel in mm : 7.3...7.7  
Del.quantity cm3/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 123.5...125.5  
1000 : (121.0...128.0)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 550  
Rack travel in mm : 15.8  
Testing:  
1st rack travel in: 11.90  
Speed rpm : 1235...1250  
2nd rack travel in: 4.00

Speed rpm : 1325...1355  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 275  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 1200  
Rack travel in m: 13.10...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 370  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 240  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1235...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.20...6.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 r  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 928  
  
Injection pump  
Pump designation : PE6P110A72ORS3258  
EP type number : 0 411 816 771  
Governor  
Governor design. : RQV325...1200PA910-1  
Governor no. : 0 421 817 880

Customer-spec. information  
Customer : DAF

Engine : HT 168 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 12.50...13.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
& maximum rack tra: 12.5...13.5  
Difference ° CS : 1.50...3.00

## BASIC SETTING

1st speed rpm : 1000  
  
Rack travel in mm : 13.30...13.40  
  
Del.quantity cm<sup>3</sup>/ : 12.3...12.5  
100 s: (12.1...12.8)  
  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 325.0  
Rack travel in mm : 7.7...8.1  
Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1245  
travel mm : 8.10...8.30  
2nd speed rpm : 325  
travel mm : 0.90...1.30  
3rd speed rpm : 500  
travel mm : 2.90...3.50  
4th speed rpm : 800  
travel mm : 4.60...5.00  
5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1240  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 123.5...125.5  
1000 : (121.0...128.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION  
Speed rpm : 340...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 370  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 240  
Rack travel in m: 11.80...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1240...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,2 c  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 929

Injection pump  
Pump designation : PE6P110A720RS3257  
EP type number : 0 411 816 772  
Governor  
Governor design. : RQ325/1200PA913-2  
Governor no. : 0 421 80 539

Customer-spec. information  
Customer : DAF

Engine : HS 200 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00x1.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 13.50...14.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0  
Rack travel in mm : 7.7...8.1  
Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 13.00

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1325...1355  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

Remarks:

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 325  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 395...435

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 390

Rack travel in m: 13.30...13.40

3rd pressure hPa : 180

Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 80.5...82.5

1000 s: (78.0...85.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1235...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,2 d  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 930  
  
Injection pump  
Pump designation : PE6P110A72ORS3257  
EP type number : 0 411 816 772  
Governor  
Governor design. : RQV325...1200PA910-1  
Governor no. : 0 421 813 880

Customer-spec. information  
Customer : DAF

Engine : HS 200 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00x1.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 13.50...14.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0  
Rack travel in mm : 7.7...8.1  
Del.quantity cm3/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm3 : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1245  
travel mm : 8.10...8.30  
2nd speed rpm : 325  
travel mm : 0.90...1.30  
3rd speed rpm : 500  
travel mm : 2.90...3.50  
4th speed rpm : 800  
travel mm : 4.60...5.00  
5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1240  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 138.0...140.0  
1000 : (135.5...142.5)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION  
Speed rpm : 340...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 390  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 180  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm3/ : 80.5...82.5  
1000 s: (78.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1240...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 h2  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 931  
 Injection pump  
 Pump designation : PE6P120A32ORS3248  
 EP type number : 0 411 826 792  
 Governor  
 Governor design. : RQV250...1000PA851-5  
 Governor no. : 0 421 813 877

Customer-spec. information  
 Customer : DAF

Engine : WS 222

1st version kW : 222.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 7.80...8.00  
 2nd speed rpm : 250  
 travel mm : 0.70...1.10  
 3rd speed rpm : 400  
 travel mm : 2.50...3.10  
 4th speed rpm : 750  
 travel mm : 4.80...5.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1075  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 189.0...191.0  
 1000 : (186.0...194.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 260...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 230  
Rack travel in m: 11.40...11.50

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 164.0...166.0  
1000 s: (161.0...169.0)

## BREAKAWAY

1st version

E28

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1040...1050

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,2 b 1  
 Edition : 31.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 932  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-3  
 EP type number : 0 411 826 794  
 Governor  
 Governor design. : RQ275/1100PA832-4  
 Governor no. : 0 421 80" 537

Customer-spec. information  
 Customer : DAF

Engine : ks 260 S

1st version kW : 260.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 6.6...7.0  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1125...1140

2nd rack travel in: 4.00

Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 275  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 395...435

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 1100  
Rack travel in m: 12.90...13.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 500  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 340  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1125...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAE 12,0 a  
Edition : 16.08.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 933

Injection pump  
Pump designation : PE6P110A320RS3260  
EP type number : 0 411 816 775  
Governor  
Governor design. : RQ250/1050PA969  
Governor no. : 0 421 801 538

Customer-spec. information  
Customer : HAEP

Engine : X6130 NA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.5...13.8

100 s: (13.2...14.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 8.5...8.9

Del.quantity cm3/ : 2.7...3.2

100 s: (2.4...3.4)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 14.60...16.20

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Del.quantity : 135.0...138.0

1000 : (132.5...140.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.4

Testing:

1st rack travel in: 11.10

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1250

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 8.7

Testing:

Speed rpm : 100  
Minimum rack travel: 10.20  
Speed rpm : 250  
Rack travel in mm : 8.60...8.80

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 760  
Rack travel in m: 12.70...12.90  
4th speed rpm : 870  
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 138.0...142.0  
1000 s: (135.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 k  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 934

Injection pump  
Pump designation : PE6P120A32ORS3176-4  
EP type number : 0 411 826 795  
Governor  
Governor design. : RQ250/1000PA218-3  
Governor no. : 0 421 80 541

Customer spec. information  
Customer : ENASA

Engine : 96 T4 EZ

1st version kW : 176.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 2.5...2.1  
100 s: (2.2...3.4)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 700  
Del.quantity : 174.0...176.0  
1000 : (171.0...179.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.10...10.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.80  
2nd pressure hPa : 170  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 120  
Rack travel in m: 9.00...9.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 117.0...119.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s18  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 936  
 Injection pump  
 Pump designation : PE6P110A320LS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQ300/900PA187-14  
 Governor no. : 0 421 80 357

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 150.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50

Speed rpm : 940...950

2nd rack travel in: 4.00  
Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.30  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,8 i 1  
Edition : 31.07.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 848 077  
  
Injection pump  
Pump designation : PE8P100A320LS845  
EP type number : 0 411 808 055  
Governor  
Governor design. : RQ300/1250PA187R  
Governor no. : 0 421 80" 034

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 402

1st version kW : 188.3  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50  
: (3.35...3.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 6.9...7.3  
Del.quantity cm3/ : 1.3...1.9  
100 s: (1.0...2.1)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.30...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 102.0...104.0  
1000 : (100.0...106.0)  
Spread cm3 : 3.00  
1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.9

Testing:

1st rack travel in: 9.00

Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1335...1365  
4th rack travel in: 1400  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.30  
Rack travel in mm : 2.00  
Speed rpm : 415...455

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 600  
Rack travel in m: 10.00...10.20

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1295...1310

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 c 2  
Edition : 06.07.90  
Replaces : 7.10.88  
Test oil : ISO-4113

Combination no. : 0 401 848 712

Injection pump  
Pump designation : PE8P110A320LS3802-10  
EP type number : 0 411 818 710  
Governor  
Governor design. : RQV300...1150PA524-2  
Governor no. : 0 421 813 264

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM422

1st version kW : 206.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.4...11.6

100 s: (11.1...11.8)

Spread cm3 : 0.4

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.00

2nd speed rpm : 800

travel mm : 5.80...6.30

3rd speed rpm : 1200

travel mm : 8.00...8.60

4th speed rpm : 1250

travel mm : 9.00...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 114.0...116.0

1000 : (111.5...118.5)

Spread cm3 : 4.00

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 10.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270

## LOW IDLE 1

Control lever  
position degrees: 18...26

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 430...490

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 132.0...137.0  
1000 s: (129.0...140.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 6  
Edition : 11.11.89  
Replaces : 29.3.89  
Test oil : ISO-4113  
  
Combination no. : 0 401 848 795  
  
Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQV300..1050PA884-1  
Governor no. : 0 421 813 686

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0  
Rack travel in mm : 8.4...8.8  
Del.quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.40  
2nd speed rpm : 800  
travel mm : 5.80...6.20  
3rd speed rpm : 1100  
travel mm : 8.20...8.60  
4th speed rpm : 1150  
travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del.quantity : 126.0...128.0  
1000 : (123.5...130.5)

Spread      cm<sup>3</sup> : 4.00  
             1000 : (7.50)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 11.70  
Speed      rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed      rpm : 1150...1180  
4th rack travel in: 1250  
Speed      rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed      rpm : 200  
Minimum rack trave: 10.00  
Speed      rpm : 300  
Rack travel in mm : 6.80...7.00

#### CONSTANT REGULATION

Speed      rpm : 300...400

#### START CUT-OUT

Speed      1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed      rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
             1000 s: (133.0...143.0)  
Spread      cm<sup>3</sup> : 7.00  
             1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed      rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
             1000 s: (136.0...164.0)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 r  
Edition : 20.07.90  
Replaces : 12.4.90  
Test oil : ISO-4113

Combination no. : 0 401 848 808

Injection pump  
Pump designation : PE8P110A32OLS3846-1  
EP type number : 0 411 818 719  
Governor  
Governor design. : RQV300...1050PA884-5  
Governor no. : 0 421 813 831

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50

2nd speed rpm : 440  
travel mm : 2.70...3.20

3rd speed rpm : 730  
travel mm : 4.70...5.20

4th speed rpm : 1110  
travel mm : 8.00...8.50

5th speed rpm : 1360  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm3 : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.30...6.90

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 117.0...123.0  
1000 s: (114.5...125.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 d 9  
Edition : 19.06.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 848 809  
  
Injection pump  
Pump designation : PE8P110A320LS3842-1  
EP type number : 0 411 818 716  
Governor  
Governor design. : RQV350...1050PA378-7  
Governor no. : 0 421 813 714

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 350.0  
Rack travel in mm : 8.0...8.3  
Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.3)  
Spread cm3 : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.50...1.70  
2nd speed rpm : 800  
travel mm : 4.90...5.30  
3rd speed rpm : 1100  
travel mm : 7.90...8.50  
4th speed rpm : 1150  
travel mm : 8.90...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1110  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 137.0...139.0  
1000 : (134.5...141.5)

Spread cm3 : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 250  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.30

CONSTANT REGULATION  
Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 123.0...127.0  
1000 s: (120.0...130.0)  
Spread cm3 : 5.00  
1000 s: (8.00)  
Speed rpm : 1050  
Del.quantity cm3/ : 87.0...89.0 \*  
1000 s: (84.0...92.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 r 1  
Edition : 19.06.90  
Replaces : 12.4.90  
Test oil : ISO-4113

Combination no. : 0 401 848 810

Injection pump  
Pump designation : PE8P110A320LS3846-1  
EP type number : 0 411 818 719  
Governor  
Governor design. : RQV300...1050PA884-7  
Governor no. : 0 421 813 859

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
                  : (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.1...11.3

100 s: (10.8...11.5)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.40

2nd speed rpm : 480  
travel mm : 3.10...3.60

3rd speed rpm : 770  
travel mm : 5.60...6.10

4th speed rpm : 1100  
travel mm : 8.70...9.20

5th speed rpm : 1310  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 111.0...113.0  
1000 : (108.5...115.5)  
Spread cm3 : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.00...7.60

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 106.0...112.0  
1000 s: (103.5...114.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 9,7 b  
Edition : 10.08.90  
Replaces : 12.9.86  
Test oil : ISO-4113  
  
Combination no. : 0 401 856 701  
  
Injection pump  
Pump designation : PE6P110A721RS3101  
EP type number : 0 411 816 725  
Governor  
Governor design. : RQV250...1200PA413  
Governor no. : 0 421 813 333

Customer-spec. information  
Customer : STEYR

Engine : WD615.67

1st version kW : 206.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1335...1365

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 360...420

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 500  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 880  
Rack travel in m: 12.20...12.30  
4th speed rpm : 1060  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...9.90  
2nd pressure hPa : 420  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 330  
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 165.0...169.0  
1000 s: (163.0...171.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 120.0...125.0  
1000 s: (117.0...125.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11/5 57  
 Edition : 03.08.90  
 Replaces : 4.5.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 295

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1000P5A508-1  
 Governor no. : 0 421 833 194

Customer-spec. information  
 Customer : DAF

Engine : DKZ 1160

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 20.6...20.8  
 100 s: (20.3...21.1)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 206.0...208.0  
 1000 : (203.0...211.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1035...1045  
 2nd rack travel in: 4.00  
 Speed rpm : 1115...1145

3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 630...690

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 400  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 300  
Rack travel in m: 13.00...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.20...10.50  
2nd pressure hPa : 340  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 260  
Rack travel in m: 10.60...11.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 140.0...142.0  
1000 s: (137.0...145.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1035...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 w1  
Edition : 08.06.90  
Replaces : 9.3.87  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 303  
  
Injection pump  
Pump designation : PE6P100A32ORS384-1  
EP type number : 0 411 806 189  
Governor  
Governor design. : RSV250...1100P5A510  
Governor no. : 0 421 837 191

Customer-spec. information  
Customer : DAF

Engine : DK 1160V

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 015  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 3.20...3.30  
                  : (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600  
  
Rack travel in mm : 11.50...11.60  
  
Del. quantity cm3/ : 11.0...11.2  
100 s: (10.8...11.4)  
  
Spread cm3 : 0.3  
100 s: (0.6)  
  
2nd speed rpm : 250.0  
Rack travel in mm : 7.2...7.4  
Del. quantity cm3/ : 1.2...1.6  
100 s: (0.9...1.8)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Del. quantity : 110.5...112.5  
1000 : (108.5...114.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1125...1135  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
3rd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.8

Speed rpm : 250

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 700...760

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.80...10.90

2nd speed rpm : 600

Rack travel in m: 11.50...11.60

3rd speed rpm : 825

Rack travel in m: 11.20...11.40

4th speed rpm : 900

Rack travel in m: 11.10...11.40

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050

Del.quantity cm3/ : 108.0...110.0

1000 s: (104.5...113.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1125...1135

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 195.0...235.0

1000 s: (191.0...239.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6k19  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 311X  
 Injection pump  
 Pump designation : PE6P120A320RS372-1Y  
 EP type number : 0 411 826 125  
 Governor  
 Governor design. : RSV250...1100P5A508-  
 2  
 Governor no. : 0 421 833 195

Customer-spec. information  
 Customer : DAF

Engine : DKX 1160

1st version kW : 242.7  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

F27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.8)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 183.5...185.5

1000 : (180.5...188.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.40

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
3rd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1425  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 640...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 400  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 300  
Rack travel in m: 11.80...12.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 370  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 300  
Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 135.5...137.5  
1000 s: (132.5...140.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 315.0...355.0  
1000 s: (311.0...359.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.0...18.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 g  
Edition : 14.09.90  
Replaces : 9.11.89  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 333  
  
Injection pump  
Pump designation : PE6P120A32ORS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RSV250...1100POA533  
Governor no. : 0 421 833 274

Customer-spec. information  
Customer : ENASA

Engine : 96 T1A0

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
  
Rack travel in mm : 10.30...10.40  
  
Del.quantity cm3/ : 18.7...18.9  
100 s: (18.4...19.2)  
  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 187.0...189.0  
1000 : (184.0...192.0)  
  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 85...93

Testing:  
1st rack travel in: 9.30

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
3rd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 60...68

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.30...10.40

2nd speed rpm : 450

Rack travel in m: 10.30...10.50

3rd speed rpm : 300

Rack travel in m: 11.50...12.20

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (136.0...164.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Navy



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f  
 Edition : 08.06.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-8  
 Governor no. : 0 421 833 298

Customer-spec. information  
 Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.1...17.3  
 100 s: (16.8...17.6)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 171.0...173.0  
 1000 : (168.0...176.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.10  
 Speed rpm : 1135...1145  
 2nd rack travel in: 4.00  
 Speed rpm : 1175...1205

3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 800  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.40...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (155.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 310.0...350.0  
1000 s: (306.0...354.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 g  
Edition : 08.06.90  
Replaces : 16.2.90  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 336  
  
Injection pump  
Pump designation : PE6P12DA32ORS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1050P5A539  
Governor no. : 0 421 833 299

Customer-spec. information  
Customer : DAF

Engine : KT 191

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650  
Rack travel in mm : 10.80...10.90  
Del.quantity cm3/ : 16.1...16.3  
100 s : (15.8...16.6)  
Spread cm3 : 0.5  
100 s : (0.9)  
  
2nd speed rpm : 250.0  
Rack travel in mm : 6.4...6.8  
Del.quantity cm3/ : 1.4...2.0  
100 s : (1.1...2.3)  
Spread cm3 : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 700  
Del.quantity : 161.0...163.0  
1000 : (158.0...166.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...104

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
3rd rack travel in: 4.00

Speed rpm : 1150...1180  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 650  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 805  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.50...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 310  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 250  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 700  
Speed rpm : 1040  
Del.quantity cm3/ : 161.0...163.0  
1000 s: (157.0...167.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 300.0...340.0  
1000 s: (296.0...344.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f1  
Edition : 08.06.90  
Replaces : 16.2.90  
Test oil : ISO-4113

Combination no. : 0 401 876 338

Injection pump  
Pump designation : PE6P120A320RS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1100P5A508-9

Governer no. : 0 421 833 321

Customer-spec. information  
Customer : DAF

Engine : KS 238

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 650

Aneroid pressure h: 700

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 99...107

## Testing:

1st rack travel in: 10.00

Speed rpm : 1130...1140

2nd rack travel in: 4.00

Speed rpm : 1185...1215

3rd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 600...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 650  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 760  
Rack travel in m: 11.60...11.80  
4th speed rpm : 810  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 300  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 230  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm3/ : 181.0...183.0  
1000 s: (177.0...187.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f2  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 341

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-10  
 Governor no. : 0 421 833 342

Customer-spec. information  
 Customer : DAF

Engine : KS 238 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.1...19.3  
 100 s: (18.8...19.6)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.6  
 Del.quantity cm3/ : 3.6...4.2  
 100 s: (3.3...4.5)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 191.0...193.0  
 1000 : (188.0...196.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 99...107

Testing:  
 1st rack travel in: 10.20  
 Speed rpm : 1125...1135  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200

3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.0  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 640...740

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.20...11.40  
2nd speed rpm : 650  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 690  
Rack travel in m: 12.10...12.20  
4th speed rpm : 760  
Rack travel in m: 11.50...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.60...9.90  
2nd pressure hPa : 340  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 210  
Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm3/ : 185.0...187.0  
1000 s: (181.0...191.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 128.5...130.5  
1000 s: (125.5...133.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1125...1135

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 295.0...335.0  
1000 s: (291.0...339.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.20...7.60  
Del.quantity cm3/ : 36.0...42.0  
1000 s: (33.0...45.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 i  
 Edition : 14.09.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 760  
 Injection pump  
 Pump designation : PE6P120A320RS3176-1  
 EP type number : 0 411 826 767  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 W1 AO

1st version kW : 250.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 2.5...3.1  
 100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 246.0...248.0

1000 : (243.0...251.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 91...99

Testing:

1st rack travel in: 12.60

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.60...13.70

2nd speed rpm : 450

Rack travel in m: 13.60...13.80

3rd speed rpm : 300

Rack travel in m: 14.80...15.40

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 12,9 b  
 Edition : 14.09.90  
 Replaces : 1.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 771  
 Injection pump  
 Pump designation : PE6P120A320RS3244  
 EP type number : 0 411 826 788  
 Governor  
 Governor design. : RSV250...1000POA545  
 Governor no. : 0 421 833 329

Customer-spec. information  
 Customer : ENASA

Engine : 98 W1A0.MR4

1st version kW : 309.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 3.6...3.8  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1500  
 Del.quantity : 260.0...262.0  
 1000 : (257.0...265.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 84...92

Testing:

1st rack travel in: 11.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 61...69  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 3.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 3.60...3.80  
Rack travel in mm : 2.00  
Speed rpm : 270...330

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in m: 12.80...13.00  
2nd speed rpm : 450  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 300  
Rack travel in m: 14.10...14.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 970  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 510  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 141.5...143.5  
1000 s: (138.5...146.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 j  
Edition : 14.09.90  
Replaces : 9.11.89  
Test oil : ISO-4113

Combination no. : 0 401 876 772

Injection pump  
Pump designation : PE6P120A320RS3200  
EP type number : 0 411 826 766  
Governor  
Governor design. : RSV250...1000POA545-  
1  
Governor no. : 0 421 833 330

Customer-spec. information  
Customer : ENASA

Engine : 96 T1E0.MR4

1st version kW : 250.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 3.3...3.7  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 81...89

#### Testing:

1st rack travel in: 10.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 59...67  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...12.00  
2nd speed rpm : 450  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 300  
Rack travel in m: 13.00...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.60...11.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 790  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 540  
Rack travel in m: 9.30...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 133.5...135.5  
1000 s: (130.5...138.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...180.0  
1000 s: (146.0...184.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 z  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 775  
  
Injection pump  
Pump designation : PE6P110A320LS3835-3  
EP type number : 0 411 816 773  
Governor  
Governor design. : RSV350...1050POA531-  
2  
Governor no. : 0 421 833 343

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 441

1st version kW : 160.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 9.2...9.6

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 13.40  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 9.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 9.20...9.60  
Rack travel in mm : 2.00  
Speed rpm : 380...440

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 126.0...130.0  
1000 s: (123.0...133.0)  
Spread cm3 : 6.00  
1000 s: (8.)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1070...1080

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Observe VDT-I-420/120



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 s 1  
Edition : 06.07.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 878 715

Injection pump  
Pump designation : PE8P110A320LS3842-2  
EP type number : 0 411 818 722  
Governor  
Governor design. : RSV350...1050POA824-13

Governer no. : 0 421 833 341

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
Phasing : 270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0  
Rack travel in mm : 8.1...8.7  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.4)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1030  
Del.quantity : 137.0...139.0  
1000 : (134.5...141.5)  
Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91...99

Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 8.30...8.50  
Rack travel in mm : 2.00  
Speed rpm : 410...470

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 a1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 022  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQ300/1000PA813-14  
 Governor no. : 0 421 80' 530

Customer-spec. information  
 Customer : MAN

Engine : D2865LF02

1st version kW : 199.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.6

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 750  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 850  
Rack travel in m: 10.70...10.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 100  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 350  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 200.0...204.0  
1000 s: (197.0...207.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 197.0...203.0  
1000 s: (194.0...206.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.60  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7043  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 a2  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 035 023  
  
Injection pump  
Pump designation : PES5P120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQ300/950PA813-15  
Governor no. : 0 421 801 532

Customer-spec. information  
Customer : MAN

Engine : D2865LFO/LU/01

1st version kW : 198.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 219.0...221.0

1000 : (216.0...224.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60

Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 825  
Rack travel in m: 11.90...12.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 110  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 450  
Rack travel in m: 11.00...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 950

Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 210.0...216.0  
1000 s: (207.0...219.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 995...1010

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7044  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 b1  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 024  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQV300...1000PA876-5  
 Governor no. : 0 421 813 865

Customer-spec. information  
 Customer : MAN

Engine : D2865LF02

1st version kW : 199.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 9.90...10.10

2nd speed rpm : 300  
 travel mm : 1.60...1.80

3rd speed rpm : 500  
 travel mm : 3.40...3.90

4th speed rpm : 800  
 travel mm : 6.80...7.20

5th speed rpm : 1250  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 254...262

Testing:  
Speed rpm : 100  
Minimum rack trave: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 280...400

TORQUE CONTROL  
Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 1000  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 900  
Rack travel in m: 10.50...10.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 100  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 350

Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 200.0...204.0  
1000 s: (197.0...207.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 197.0...203.0  
1000 s: (194.0...206.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 7045

Setting and blocking of pointer of  
start-of-delivery sensor ori cyl. 5  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 b2  
Edition : 31.07.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 035 025  
Injection pump  
Pump designation : PES5P120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQV300...950PA876-8  
Governor no. : 0 421 813 868

Customer spec. information  
Customer : MAN

Engine : D2865LFO/LU/01

1st version kW : 198.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del. quantity cm3/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 3.9...4.1  
Del. quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 995  
travel mm : 9.70...9.90  
2nd speed rpm : 300  
travel mm : 1.00...1.20  
3rd speed rpm : 500  
travel mm : 3.40...4.00  
4th speed rpm : 750  
travel mm : 6.60...7.00  
5th speed rpm : 1250  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1020  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000

Del.quantity : 219.0...221.0  
1000 : (216.0...224.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 10.10  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 253...261

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 11.10...11.30  
2nd speed rpm : 750  
Rack travel in m: 11.20...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.90...8.10  
2nd pressure hPa : 110  
Rack travel in m: 8.30...8.40  
3rd pressure hPa : 450  
Rack travel in m: 10.20...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 210.0...216.0  
1000 s: (207.0...219.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 7046

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a21  
Edition : 29.06.90  
Replaces : 2.10.89  
Test oil : ISO-4113

Combination no. : 0 402 036 057

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQV300.. 1100PA700-1  
Governor no. : 0 421 813 528

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

H01

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.40...1.60  
2nd speed rpm : 850  
travel mm : 5.60...5.90  
3rd speed rpm : 1100  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del.quantity : 202.0...204.0  
1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 80...88

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1100  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 850  
Rack travel in m: 11.30...11.50  
4th speed rpm : 975  
Rack travel in m: 11.00...11.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 85  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 280

HQ2

Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 206.0...208.0  
1000 s: (203.0...211.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a38  
Edition : 29.06.90  
Replaces : 15.12.89  
Test oil : ISO-4113

Combination no. : 0 402 036 078

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1170PA813-8  
Governor no. : 0 421 801 483

Customer-spec. information  
Customer : MAN

Engine : D2866LF/290

1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

H03

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80...9.90

Del.quantity cm<sup>3</sup>/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.6...5.0  
Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1000  
Del.quantity : 184.0...186.0  
1000 : (181.0...189.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 15.5

Testing:

1st rack travel in: 8.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.10...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 85  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.00

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 185.0...188.0  
1000 s: (182.0...191.0)

Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7760

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a42  
 Edition : 06.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 081  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1070PA813-16  
 Governor no. : 0 421 801 531

Customer-spec. information  
 Customer : MAN

Engine : D2866LF 04...LH01

1st version kW : 21.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

H05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm3/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del.quantity : 183.0...185.0  
 1000 : (180.0...188.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.80  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 355...395

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 850  
Rack travel in m: 10.10...10.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.20...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

H06

Del.quantity cm3/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 5-7053

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a43  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 082  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300.. 1000PA876-7  
 Governor no. : 0 421 813 867

Customer-spec. information  
 Customer : MAN

Engine : D2866LF 04..LH01

1st version kW : 221.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

H07

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 9.90...10.10

2nd speed rpm : 300  
 travel mm : 1.60...1.80

3rd speed rpm : 500  
 travel mm : 3.40...4.00

4th speed rpm : 800  
 travel mm : 6.70...7.10

5th speed rpm : 1250  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000  
Del.quantity : 183.0...185.0  
1000 : (180.0...188.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 8.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 256...264

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 280...390

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 900  
Rack travel in m: 10.00...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40

3rd pressure hPa : 160  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 3-7054

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 j2  
Edition : 06.07.90  
Replaces : 30.3.90  
Test oil : ISO-4113

Combination no. : 0 402 036 729

Injection pump  
Pump designation : PES6P120A720/3LS3205  
EP type number : 0 412 026 729  
Governor  
Governor design. : RQ300/1100PA813-7  
Governor no. : 0 421 80<sup>a</sup> 474

Customer-spec. information  
Customer : MAN

Engine : D2866LXUH

1st version kW : 273.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.3...4.5  
Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 650  
Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del. quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 12.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 700  
Rack travel in m: 14.30...14.40  
3rd speed rpm : 885  
Rack travel in m: 13.80...14.10  
4th speed rpm : 935  
Rack travel in m: 13.30...13.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 190  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 520  
Rack travel in m: 12.00...12.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200

H10

Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7946

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 p  
Edition : 03.08.90  
Replaces : 30.3.90  
Test oil : ISO-4113

Combination no. : 0 402 036 733

Injection pump  
Pump designation : PES6P120A720/3LS3247  
EP type number : 0 412 026 735  
Governor  
Governor design. : RQV300...1100PA876-4  
Governor no. : 0 421 813 851

Customer-spec. information  
Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
travel mm : 8.30...8.50

2nd speed rpm : 300  
travel mm : 1.10...1.30

3rd speed rpm : 500  
travel mm : 2.90...3.50

4th speed rpm : 900  
travel mm : 5.90...6.30

5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 298...306

### Testing:

1st rack travel in: 13.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 259...267

### Testing:

Speed rpm : 200  
Minimum rack trave: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

## CONSTANT REGULATION

Speed rpm : 320...430

## TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 950  
Rack travel in m: 14.70...14.90

## Aneroid/Altitude

### Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

## Measurement

Speed 1/min : 500

H12

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 14.00...14.40

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200

Speed rpm : 1100

Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)

Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 95.0...101.0  
1000 s: (92.0...104.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.60

Speed rpm : 1140...1150

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

## LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.80...5.20

Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 u2  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 736  
Injection pump  
Pump designation : PES6P120A720/3LS3255  
EP type number : 0 412 026 739  
Governor  
Governor design. : RQ300/1100PA813-12  
Governor no. : 0 421 801 518

## Customer-spec. information

Customer : MAN  
Engine : D2866LF01  
1st version kW : 273.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8  
Test lines : 1 680 750 067  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 15.00...15.10  
Del.quantity cm3/ : 24.2...24.4  
100 s: (23.9...24.7)  
Spread cm3 : 0.5  
100 s: (0.9)  
2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.4  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 700  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 900  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H14

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Speed rpm : 700  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 u3  
Edition : 06.07.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 737  
  
Injection pump  
Pump designation : PES6P120A720/3LS3255  
EP type number : 0 412 026 739  
Governor  
Governor design. : RQV300...1100PA876-4  
Governor no. : 0 421 813 851

Customer-spec. information  
Customer : MAN

Engine : D2866LF01

1st version kw : 273.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 8.30...8.50

2nd speed rpm : 300

travel mm : 1.10...1.30

3rd speed rpm : 500

travel mm : 3.00...3.40

4th speed rpm : 800

travel mm : 5.20...5.60

5th speed rpm : 1400

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 242.0...244.0  
 1000 : (239.0...247.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

## 1st version

Control lever  
 position degrees: 296...304

## Testing:

1st rack travel in: 13.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1255...1285  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 259...267

## Testing:

Speed rpm : 200  
 Minimum rack travel: 6.00  
 Speed rpm : 300  
 Rack travel in mm : 4.90...5.10

## CONSTANT REGULATION

Speed rpm : 320...430

## TORQUE CONTROL

Dimension a mm : 0.30  
 Torque control curve - 1st version  
 1st speed rpm : 1100  
 Rack travel in m: 14.70...14.80  
 2nd speed rpm : 700  
 Rack travel in m: 15.00...15.10  
 3rd speed rpm : 900  
 Rack travel in m: 14.80...14.90

## Aneroid/Altitude

### Compensator Test

## 1st version

Setting  
 Speed rpm : 500  
 Pressure hPa : 1200  
 Rack travel mm : 15.00...15.10

## Measurement

Speed 1/min : 500

H16

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.10...12.20

3rd pressure hPa : 470

Rack travel in m: 14.30...14.70

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1200  
 Speed rpm : 1100  
 Del.quantity cm<sup>3</sup>/ : 26.0  
 1000 s: 239.0)  
 Speed rpm : 1100  
 Del.quantity cm<sup>3</sup>/ : 1.0  
 1000 s: 100.0)  
 Spread cm<sup>3</sup> : 100  
 Speed rpm : 1100  
 Del.quantity : 0...136.0  
 1000 s: 100...139.0)

## BREAKAW

## 1st version

1mm rack travel less than

full load rack tr: 13.70

Speed rpm : 1140...1150

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
 1000 s: (206.0...234.0)

## LOW IDLE

Speed rpm : 300  
 Rack travel in mm : 4.70...5.10  
 Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
 1000 s: (14.0...26.0)  
 Spread cm<sup>3</sup> : 8.00  
 1000 s: (12.00)

## Remarks:

: MAN-NR. 2-7890

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 v  
Edition : 29.06.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 738  
Injection pump  
Pump designation : PES6P120A720/3LS3254  
EP type number : 0 412 026 740  
Governor  
Governor design. : RQV300...950PA959  
Governor no. : 0 421 813 860

Customer-spec. information  
Customer : MAN

Engine : D2866LF02

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 995  
travel mm : 9.70...9.90  
2nd speed rpm : 300  
travel mm : 0.90...1.10  
3rd speed rpm : 500  
travel mm : 3.40...4.00  
4th speed rpm : 750  
travel mm : 6.60...7.00  
5th speed rpm : 1250  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1025  
Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 298...306

### Testing:

1st rack travel in: 13.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 254...262

### Testing:

Speed rpm : 200  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

## CONSTANT REGULATION

Speed rpm : 320...430

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.60...11.80

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 990...1000

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7942

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 w  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 739  
  
Injection pump  
Pump designation : PES6P120A720/3LS3254  
-1  
EP type number : 0 412 026 741  
Governor  
Governor design. : RQ300/957PA813-10  
Governor no. : 0 421 801 493

Customer-spec. information  
Customer : MAN

Engine : D2866LF02

1st version kw : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

H2O

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50  
Speed rpm : 995...1110  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.90

Testing:

Speed rpm : 200  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 320...430

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.10...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H21

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Speed rpm : 700  
Del.quantity cm3/ : 93.0...101.0  
1000 s: (90.0...104.0)  
Spread cm3 : 10.00  
1000 s: (14.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 995...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7962

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 u4  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 742  
 Injection pump  
 Pump designation : PES6P120A720/3LS3255  
 EP type number : 0 412 026 739  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 801 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LF01

1st version kw : 273.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version



Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.9

Testing:

Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 900  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 520  
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H23

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 c  
Edition : 06.07.90  
Replaces : 6.4.90  
Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump  
Pump designation : PES6P120A320RS426  
EP type number : 0 412 026 039  
Governor  
Governor design. : RQV250...1100PA570  
Governor no. : 0 421 813 295

Customer-spec. information  
Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 4.5...4.7  
Del.quantity cm3/ : 1.9...2.5  
100 s: (1.6...2.8)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.50...1.60  
2nd speed rpm : 800  
travel mm : 4.70...4.90  
3rd speed rpm : 1100  
travel mm : 6.80...7.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1270  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 700  
Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 8.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 64...72

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 275...400

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.00...9.20  
3rd speed rpm : 1020  
Rack travel in m: 9.30...9.50  
4th speed rpm : 890  
Rack travel in m: 9.90...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 290  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 245  
Rack travel in m: 8.90...9.10

START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 164.0...170.0  
1000 s: (161.0...173.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.10  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 k  
 Edition : 20.07.90  
 Replaces : 6.4.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 340  
 Injection pump  
 Pump designation : PES6P120A320RS525  
 EP type number : 0 412 026 058  
 Governor  
 Governor design. : RQV300...1050PA955  
 Governor no. : 0 421 813 856

Customer-spec. information  
 Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 13.5...13.7

100 s: (13.2...14.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
 travel mm : 8.00...8.20

2nd speed rpm : 300  
 travel mm : 1.10...1.50

3rd speed rpm : 430  
 travel mm : 3.40...4.00

4th speed rpm : 1400  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 135.0...137.0

1000 : (132.0...140.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 298...306

Testing:  
1st rack travel in: 8.20  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 244...252

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 310...430

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm3/ : 124.0...132.0  
1000 s: (121.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.20  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

H27

Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ROL 12,2 h1  
Edition : 20.07.90  
Replaces : 9.3.87  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 772  
  
Injection pump  
Pump designation : PES6P120A320RS3170  
EP type number : 0 412 026 722  
Governor  
Governor design. : RQV250...950PA794-1  
Governor no. : 0 421 813 579

Customer-spec. information  
Customer : ROLLS ROYCE

Engine : EAGLE LE 300

1st version kW : 204.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.50...1.70

2nd speed rpm : 350  
travel mm : 2.20...2.70

3rd speed rpm : 500  
travel mm : 3.00...3.40

4th speed rpm : 1000  
travel mm : 8.00...8.20

5th speed rpm : 1060  
travel mm : 8.90...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 700

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 11.90  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...470

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 330  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 440  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 500

Del.quantity cm3/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 170.0...174.0  
1000 s: (167.0...177.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...170.0  
1000 s: (136.0...174.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RV1 9,8 f  
Edition : 01.06.90  
Replaces : 30.9.88  
Test oil : ISO-4113

Combination no. : 0 402 046 798

Injection pump  
Pump designation : PES6P120A32ORS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQ275/1050PA893  
Governor no. : 0 421 801 442

Customer-spec. information  
Customer : RVI

Engine : MIDR 062045 M

1st version kw : 236.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 21.8...22.0

100 s : (21.5...22.3)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.2...5.6  
Del.quantity cm3/ : 2.2...2.8  
100 s : (1.9...3.1)  
Spread cm3 : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 218.0...220.0  
1000 : (215.0...223.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1115...1130  
2nd rack travel in: 4.30



Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.30  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 0.40...0.60  
2nd speed rpm : 1050  
Rack travel in m: 0.30...0.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000

#### Measurement

Speed 1/min : 500

#### 1st pressure hPa : -

Rack travel in m: 8.50...8.90  
2nd pressure hPa : 360  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 160  
Rack travel in m: 9.40...9.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 217.0...223.0  
1000 s: (214.0...226.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 101.0...103.0  
1000 s: (98.0...106.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1115...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.60  
Del.quantity cm3/ : 22.0...28.0  
1000 s: (19.0...31.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 7,7 a  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 815  
 Injection pump  
 Pump designation : PES6P120A720RS3249  
 EP type number : 0 412 026 737  
 Governor  
 Governor design. : RQV300...1100PA954K  
 Governor no. : 0 421 815 243

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8360.46.007

1st version kW : 196.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 2.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1160  
 travel mm : 10.60...10.80

2nd speed rpm : 300  
 travel mm : 1.00...1.40

3rd speed rpm : 850  
 travel mm : 6.60...7.00

4th speed rpm : 1350  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 330...390

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.30  
3rd speed rpm : 300  
Rack travel in m: 9.80...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 13.60...13.70

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 810  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 430  
Rack travel in m: 10.00...10.30

START CUT-OUT

J05

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm3/ : 182.0...188.0  
1000 s: (179.0...191.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 96.0...98.0  
1000 s: (93.0...101.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (96.0...124.0)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 8,8 a  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 816

Injection pump  
Pump designation : PES6P120A320RS3253  
EP type number : 0 412 026 738  
Governor  
Governor design. : RQV250...1100PA956  
Governor no. : 0 421 813 857

Customer-spec. information  
Customer : ENASA

Engine : 97 R1 AX

1st version kW : 221.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 2.5...3.1

100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 1.70...2.30

3rd speed rpm : 700  
travel mm : 4.30...4.90

4th speed rpm : 1155  
travel mm : 8.40...8.60

5th speed rpm : 1250  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 189.0...191.0  
1000 : (186.0...194.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 103...111

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 70...78

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...11.00  
2nd pressure hPa : 670  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 530  
Rack travel in m: 11.40...11.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

J07

Aneroid pressure h: 900  
Speed rpm : 1100  
Del.quantity cm3/ : 194.0...200.0  
1000 s: (191.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

## Note remarks

```
Prestroke mm      : 2.80...2.90
                  : (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order      : 1- 5- 3- 6- 2- 4
```

```
1st version
Speed      rpm      : 1150
Aneroid pressure h: 900
Del.quantity 1000 : (148.0...153.0)
Spread      cm3      : 4.00
              1000   : (7.50)
```

#### RATED SPEED

1st version  
Control lever  
position degrees: 119...127

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 89...97

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

#### CONSTANT REGULATION

Speed rpm : 320...520

Aneroid/Altitude  
Compensator Test

#### 1st version

#### Setting

Speed rpm : 450  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 510  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 410  
Rack travel in m: 12.70...12.90

#### START CUT-OUT

Speed 1/min : 250 (270)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 153.0...157.0  
1000 s: (151.0...159.0)

Aneroid pressure h: -

Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 w  
Edition : 06.07.90  
Replaces : 15.3.90  
Test oil : ISO-4113

Combination no. : 0 402 075 700

Injection pump  
Pump designation : PES5P110A720LS3218  
EP type number : 0 412 015 702  
Governor  
Governor design. : RSV350...1100POA487-  
7  
Governor no. : 0 421 833 314

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM449

1st version kW : 140.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

J10

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1080  
Rack travel in mm : 10.80...10.90  
Del.quantity cm3/ : 13.5...13.7  
100 s: (13.2...13.9)  
Spread cm3 : 0.4  
100 s: (0.8)

2nd speed rpm : 350.0  
Rack travel in mm : 6.3...6.7  
Del.quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.0)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1080  
Del.quantity : 135.0...137.0  
1000 : (132.5...139.5)  
Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 93...101

Testing:



1st rack travel in: 9.80  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5  
Speed rpm : 350  
Rack travel in mm : 6.30...6.70  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 111.0...115.0  
1000 s: (108.0...118.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 L21  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 053A  
 Injection pump  
 Pump designation : PES6P110A820LS442-1  
 EP type number : 0 412 016 063  
 Governor  
 Governor design. : RSV350...1100POA485  
 Governor no. : 0 421 833 168

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 407

1st version kW : 147.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.5...10.7

100 s: (10.2...10.9)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 1250

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.0...107.0

1000 : (102.5...109.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.9  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 435...495

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 92.0...96.0  
1000 s: (89.0...99.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,4 q 4  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 718A  
 Injection pump  
 Pump designation : PES6P120A820LS3112-1  
 EP type number : 0 412 026 716  
 Governor  
 Governor design. : RSV350...1100POA500  
 Governor no. : 0 421 833 169

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM407A

1st version kW : 200.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 16.6...16.8

100 s: (16.3...17.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del.quantity : 166.0...168.0  
 1000 : (163.0...171.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 44...52

Testing:

1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.8  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 420...467

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 600  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 500  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 400  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 168.0...174.0  
1000 s: (165.0...177.0)  
Spread cm3 : 7.50  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

Spread cm3 : 7.50  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 1  
 Edition : 08.08.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 722  
 Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534  
 Governor no. : 0 421 833 275

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 HF

1st version kW : 205.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 2.0...2.4  
 100 s: (1.8...2.6)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 168.0...170.0

1000 : (166.0...172.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.00...13.20

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : 585  
Rack travel in m: 11.10...11.20  
2nd pressure hPa : 770  
Rack travel in m: 12.30...12.70  
3rd pressure hPa : 1200  
Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 174.5...178.5  
1000 s: (172.5...180.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 117.5...121.5  
1000 s: (114.5...124.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (18.0...26.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE32035  
Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 g  
Edition : 05.10.90  
Replaces : 2.5.90  
Test oil : ISO-4113

Combination no. : 0 402 076 733

Injection pump  
Pump designation : PES6P110A720RS3224  
EP type number : 0 412 016 726  
Governor  
Governor design. : RSV475...1050P2A534-  
5  
Governor no. : 0 421 833 313

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 3.35...3.45  
: (3.30...3.50)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 13.20...13.30  
Del.quantity cm3/ : 15.8...16.0  
100 s: (15.6...16.2)  
Spread cm3 : 0.4  
100 s: (0.6)

2nd speed rpm : 475.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.8...1.7)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 900  
Del.quantity : 158.0...160.0  
1000 : (156.0...162.0)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44



### Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1145  
3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.6

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 6.00...6.20

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 335  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 185  
Rack travel in m: 11.50...11.90

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 475  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 10.5...14.5  
1000 s: (8.0...17.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

### Remarks:

: JOHN DEERE # RE39856

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g 9  
Edition : 08.08.90  
Replaces : 2.5.90  
Test oil : ISO-4113

Combination no. : 0 402 076 737

Injection pump  
Pump designation : PES6P110A72ORS3083-1  
EP type number : 9 410 231 027  
Governor  
Governor design. : RSV475...1050POA455-4  
Governor no. : 0 421 833 340

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466AT014

1st version kW : 151.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 131.5...133.5

1000 : (129.5...135.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 6.20...6.40

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 136.5...140.5  
1000 s: (134.5...142.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 475  
Rack travel in mm : 6.20...6.40  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE44340

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

#### APPLICATION

Excavator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 16,3 b  
Edition : 05.10.90  
Replaces : 2.2.90  
Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump  
Pump designation : PE8P120A12ORS7141  
EP type number : 0 412 628 823  
Governor  
Governor design. : RQ750PA871  
Governor no. : 0 421 801 404

Customer-spec. information  
Customer : PERKINS

Engine : CV8-320 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 33.3...33.5

100 s: (33.0...33.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 3.6...4.2

100 s: (3.3...4.5)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 333.0...335.0

1000 : (330.0...338.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 85...89

### Testing:

1st rack travel in: 13.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 795...805

4th rack travel in: 900

Speed rpm : 0.00...1.00

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 b  
Edition : 31.07.90  
Replaces : 2.2.90  
Test oil : ISO-4113

Combination no. : 0 402 640 812

Injection pump  
Pump designation : PE12P120A520LS7820  
EP type number : 0 412 620 814  
Governor  
Governor design. : RQV350...1150PA870-4  
Governor no. : 0 421 813 717

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm<sup>3</sup>/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 350.0  
Rack travel in mm : 5.0...6.6  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80  
2nd speed rpm : 600  
travel mm : 3.30...3.80  
3rd speed rpm : 960  
travel mm : 5.30...5.80  
4th speed rpm : 1206  
travel mm : 7.90...8.40  
5th speed rpm : 1291  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1275  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 312.0...314.0  
1000 : (309.0...317.0)  
Spread cm3 : 6.00  
1000 : (10.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 62...70

#### Testing:

Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

#### CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.80...8.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.20...9.30  
2nd pressure hPa : 1100  
Rack travel in m: 13.40...13.70

#### START CUT-OUT

Speed 1/min : 310 (330)

#### FUEL DELIVERY CHARACTERISTICS

J25

### 1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1190...1200

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b2  
 Edition : 14.09.90  
 Replaces : 17.5.90  
 Test oil : ISO-4113

Combination no. : 0 402 640 815

Injection pump  
 Pump designation : PE12P120A52OLS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV300...1150PA902-4  
 Governor no. : 0 421 813 870

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 30.1...30.3  
 100 s: (29.8...30.6)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 500.0  
 Rack travel in mm : 9.1...9.3  
 Del.quantity cm3/ : 14.9...15.1  
 100 s: (14.6...15.4)

Spread cm3 : 0.8  
 100 s: (1.2)

3rd speed rpm : 300  
 Rack travel in mm : 7.20...7.40  
 Del.quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)

Spread cm3 : -  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.60

2nd speed rpm : 450  
 travel mm : 2.90...3.50

3rd speed rpm : 750  
 travel mm : 5.60...6.00

4th speed rpm : 1150  
 travel mm : 9.50...9.70

5th speed rpm : 1400  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1



Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 1150  
Aneroid pressure h : 1300  
Del.quantity : 301.0...303.0  
1000 : (298.0...306.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 118...126

##### Testing:

1st rack travel in: 12.60  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 79...87

##### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 100  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

J27

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (-)  
Rack travel in mm : 17.50

#### HIGH IDLE

##### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)

##### 2nd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : < 50.0  
1000 s: (-)

##### 3rd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : 8.40...8.60  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8 ,10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b1  
Edition : 21.09.90  
Replaces : 26.6.90  
Test oil : ISO-4113

Combination no. : 0 402 640 816

Injection pump  
Pump designation : PE12P120A520LS7824  
EP type number : 0 412 620 816  
Governor  
Governor design. : RQV250...1150PA902-3  
Governor no. : 0 421 813 761

Customer-spec. information  
Customer : MAN

Engine : D284<sup>3</sup> AE

1st version kW : 662.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 500.0  
Rack travel in mm : 9.4...9.6  
Del.quantity cm<sup>3</sup>/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

3rd speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 5.2...6.0 \*

100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.10  
2nd speed rpm : 450  
travel mm : 2.90...3.50  
3rd speed rpm : 750  
travel mm : 5.50...5.90  
4th speed rpm : 1150  
travel mm : 9.20...9.40  
5th speed rpm : 1400  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1225  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 117...125

### Testing:

1st rack travel in: 11.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 76...84

### Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 430...490

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 12.70...12.80

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 100  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 400  
Rack travel in m: 11.90...12.30

## START CUT-OUT

Speed 1/min : 170 (190)

K02

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm3/ : - \*\*  
1000 s: (-)

### 2nd version

Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm3/ : < 50.0  
1000 s: (-)

### 3rd version

Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm3/ : 125.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7959

\* applies to cylinders 4, 5, 6, 8 ,10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 c  
Edition : 31.07.90  
Replaces : 2.2.90  
Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump  
Pump designation : PE12P120A520LS7826  
EP type number : 0 412 620 817  
Governor  
Governor design. : RQV350...1150PA870-4  
Governor no. : 0 421 813 717

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0  
Rack travel in mm : 5.3...5.9  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 600  
travel mm : 3.30...3.80

3rd speed rpm : 960  
travel mm : 5.30...5.80

4th speed rpm : 1206  
travel mm : 7.90...8.40

5th speed rpm : 1291  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1275  
Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 312.0...314.0  
1000 : (309.0...317.0)  
Spread cm3 : 6.00  
1000 : (10.00)

## RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 14.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 9.60...9.70

2nd pressure hPa : 1100

Rack travel in m: 13.80...14.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

K05

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 e1  
Edition : 14.09.90  
Replaces : 17.5.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 640 818  
  
Injection pump  
Pump designation : PE12P120A520LS7829  
EP type number : 0 412 620 821  
Governor  
Governor design. : RGV300...1150PA943-1  
Governor no. : 0 421 813 869

Customer-spec. information  
Customer : MAN

Engine : D2842LZE

1st version kW : 809.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 30.4...30.6

100 s: (30.1...30.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 9.10...9.30

Del.quantity cm3/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm3 : 0.8

100 s: (1.2)

3rd speed rpm : 300

Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 \*

100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.60

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 750

travel mm : 5.70...6.10

4th speed rpm : 1150

travel mm : 9.50...9.70

5th speed rpm : 1400

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80



# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 304.0...306.0  
1000 : (301.0...309.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 118...126

### Testing:

1st rack travel in: 12.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control Lever  
position degrees: 79...87

### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50

## CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.80...13.90

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 100  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.80

## START CUT-OUT

K07

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

### 1st version

Speed rpm : 500  
Rack travel in mm : < 7.00  
Del.quantity cm3/ : - \*\*  
1000 s: (-)

### 2nd version

Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm3/ : < 50.0  
1000 s: (-)

### 3rd version

Speed rpm : 500  
Rack travel in mm : 8.50...8.70  
Del.quantity cm3/ : 125.0  
1000 s: (-)

## Remarks:

: MAN-NR. 3-7023

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9

and 11

APPLICATION

Ship



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 x 2  
Edition : 14.09.90  
Replaces : 1.2.90  
Test oil : ISO-4113

Combination no. : 0 402 640 819

Injection pump  
Pump designation : PE12P120A320LS7807-3  
EP type number : 0 412 620 822  
Governor  
Governor design. : RQV350...1050PA842-6  
Governor no. : 0 421 813 853

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.70...1.20

2nd speed rpm : 600  
travel mm : 3.10...3.60

3rd speed rpm : 940  
travel mm : 5.20...5.70

4th speed rpm : 1105  
travel mm : 6.70...7.20

5th speed rpm : 1263  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
 Aneroid pressure h: 660  
 Del.quantity : 199.0...201.0  
 1000 : (196.0...204.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
 position degrees: 107...115

Testing:

1st rack travel in: 11.20  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
 Speed rpm : 1155...1185  
 4th rack travel in: 1250  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 62...70

Testing:

Speed rpm : 250  
 Minimum rack trave: 7.10  
 Speed rpm : 350  
 Rack travel in mm : 5.40...5.60

## CONSTANT REGULATION

Speed rpm : 400...600

## TORQUE CONTROL

Dimension a mm : 1.30  
 Torque control curve - 1st version  
 1st speed rpm : 1050  
 Rack travel in m: 12.20...12.40  
 2nd speed rpm : 975  
 Rack travel in m: 12.60...12.80  
 3rd speed rpm : 875  
 Rack travel in m: 13.20...13.40  
 4th speed rpm : 700  
 Rack travel in m: 13.50...13.70

Aneroid/Altitude  
 Compensator Test

1st version

Setting

Speed rpm : 600  
 Pressure hPa : 660  
 Rack travel mm : 13.50...13.70

Measurement

K10

Speed 1/min : 600

1st pressure hPa : 350  
 Rack travel in m: 11.30...11.50  
 2nd pressure hPa : 500  
 Rack travel in m: 12.80...13.00  
 3rd pressure hPa : 830  
 Rack travel in m: 13.70...13.80  
 4th pressure hPa : 1150  
 Rack travel in m: 13.70...13.90  
 5th pressure hPa : -  
 Rack travel in m: 10.40...10.60

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
 Speed rpm : 1050  
 Del.quantity cm3/ : 170.0...174.0  
 1000 s: (167.0...177.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1100  
 Speed rpm : 750  
 Del.quantity cm3/ : 204.0...208.0  
 1000 s: (201.0...211.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: 1100  
 Speed rpm : 1050  
 Del.quantity cm3/ : 150.0...154.0  
 1000 s: (147.0...157.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 136.0...138.0  
 1000 s: (133.0...141.0)  
 Spread cm3 : 8.00  
 1000 s: (12.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
 Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 e  
Edition : 20.07.90  
Replaces : 17.5.90  
Test oil : ISO-4113

Combination no. : 0 402 640 820

Injection pump  
Pump designation : PE12P120A320LS7814-2  
EP type number : 0 412 620 824  
Governor  
Governor design. : RQ750PA966  
Governor no. : 0 421 801 535

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 535.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 19.00...21.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.90...15.00

Del.quantity cm3/ : 31.6...31.8

100 s: (31.3...32.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.6...5.2  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 760  
travel mm : 4.30...4.80  
2nd speed rpm : 830  
travel mm : 11.70...12.20  
3rd speed rpm : 890  
travel mm : 13.00...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del.quantity : 316.0...318.0  
1000 : (313.0...321.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 76...84

Testing:  
1st rack travel in: 13.90  
Speed rpm : 755...760  
2nd rack travel in: 4.00  
Speed rpm : 780...790  
4th rack travel in: ?  
Speed rpm : 0.00...1.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 755...760

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 a 1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 821  
 Injection pump  
 Pump designation : PE12P120A520LS7814  
 EP type number : 0 412 620 813  
 Governor  
 Governor design. : RQV350...1050PA870-9  
 Governor no. : 0 421 813 873

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.00...13.20

Del.quantity cm<sup>3</sup>/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.3...5.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80  
 2nd speed rpm : 600  
 travel mm : 3.30...3.80  
 3rd speed rpm : 900  
 travel mm : 5.40...5.90  
 4th speed rpm : 1100  
 travel mm : 7.60...8.10  
 5th speed rpm : 1200  
 travel mm : 9.60...10.10

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1275  
 Rack travel in mm : 15.20...17.80



# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 650  
 Aneroid pressure h: 1100  
 Del.quantity : 262.0...265.0  
     1000 : (259.0...268.0)  
 Spread cm3 : 5.00  
     1000 : (9.00)

## RATED SPEED

## 1st version

Control lever  
 position degrees: 113...121

## Testing:

1st rack travel in: 11.80  
     Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
     Speed rpm : 1160...1190  
 4th rack travel in: 1250  
     Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 62...70

## Testing:

Speed rpm : 250  
 Minimum rack trave: 7.30  
 Speed rpm : 350  
 Rack travel in mm : 5.30...5.90

## CONSTANT REGULATION

Speed rpm : 350...600

## TORQUE CONTROL

Dimension a mm : 0.90  
 Torque control curve - 1st version  
 1st speed rpm : 1050  
     Rack travel in m: 12.80...12.90  
 2nd speed rpm : 850  
     Rack travel in m: 13.70...13.90

## Aneroid/Altitude

### Compensator Test

## 1st version

Setting  
 Speed rpm : 650  
 Pressure hPa : 1100  
 Rack travel mm : 13.00...13.20

## Measurement

Speed 1/min : 650

1st pressure hPa : 500  
 Rack travel in m: 9.50...9.70

2nd pressure hPa : 700  
 Rack travel in m: 11.10...11.30  
 3rd pressure hPa : 1400  
 Rack travel in m: 13.20...13.30  
 4th pressure hPa : 1500  
 Rack travel in m: 13.40...13.60  
 5th pressure hPa : -  
 Rack travel in m: 8.20...8.50

## START CUT-OUT

Speed 1/min : 310 (330)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1850  
 Speed rpm : 1050  
 Del.quantity cm3/ : 261.0...264.0  
     1000 s: (258.0...267.0)  
 Spread cm3 : 8.00  
     1000 s: (12.0)  
 Aneroid pressure h: 1850  
 Speed rpm : 750  
 Del.quantity cm3/ : 278.0...282.0  
     1000 s: (275.0...285.0)  
 Spread cm3 : -  
     1000 s: (12.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 130.0...132.0  
     1000 s: (127.0...135.0)  
 Spread cm3 : 8.00  
     1000 s: (12.0)

## BREAKAWAY

## 1st version

1mm rack travel less than  
 full load rack tr: 11.80  
 Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 260.0...280.0  
     1000 s: (256.0...284.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 e 1  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 822  
 Injection pump  
 Pump designation : PE12P120A320LS7814-2  
 EP type number : 0 412 620 824  
 Governor  
 Governor design. : RQ750PA966-1  
 Governor no. : 0 421 801 550

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 539.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 29.4...29.6

100 s: (29.1...29.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.6...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 935  
 travel mm : 4.60...5.10  
 2nd speed rpm : 1070  
 travel mm : 13.70...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Del.quantity : 294.0...296.0  
 1000 : (291.0...299.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 77...85

Testing:

1st rack travel in: 13.50  
Speed rpm : 905...910  
2nd rack travel in: 4.00  
Speed rpm : 940...950  
4th rack travel in: 1000  
Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 u 1  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 640 823  
  
Injection pump  
Pump designation : PE12P120A320LS7805  
EP type number : 0 412 620 802  
Governor  
Governor design. : RQV350...1050PA781-1  
Governor no. : 0 421 813 890

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...160

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
                  180-225-240-285-300-  
                  345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.90...14.00

Del.quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.90

2nd speed rpm : 481  
travel mm : 3.00...3.50

3rd speed rpm : 1107  
travel mm : 7.40...7.90

4th speed rpm : 1420  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 94...102

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1090...1110  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 44...52

Testing:  
Speed rpm : 250  
Minimum rack travel: 6.80  
Speed rpm : 350  
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION  
Speed rpm : 400...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 500  
Rack travel in m: 12.90...13.10

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 600  
Del.quantity cm3/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1090...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 16,0 c1  
Edition : 31.08.90  
Replaces : 16.2.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 877  
  
Injection pump  
Pump designation : PE6P130A72ORS7122-1  
EP type number : 0 412 636 812  
Governor  
Governor design. : RQV225...930PA922  
Governor no. : 0 421 813 763

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD162 FL,FJ,

1st version kW : 331.0  
Rated speed : 1860

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 30.0...30.3

100 s: (29.7...30.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0  
Rack travel in mm : 4.9...5.1  
Del.quantity cm3/ : 2.5...3.0  
100 s: (2.3...3.3)  
Spread cm3 : 0.5  
100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40  
2nd speed rpm : 350  
travel mm : 2.10...2.70  
3rd speed rpm : 700  
travel mm : 5.60...6.20  
4th speed rpm : 975  
travel mm : 8.20...8.40  
5th speed rpm : 1090  
travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 7.70...10.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200

Del.quantity : 300.5...303.5  
1000 : (297.0...307.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.50  
Speed rpm : 970...980  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 720  
Rack travel in m: 12.80...13.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 180.0...183.0  
1000 s: (176.5...183.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 970...980

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 9.50...9.70

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 25.5...30.5  
1000 s: (23.0...33.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k6  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 894  
 Injection pump  
 Pump designation : PE6P120A32ORS7194  
 EP type number : 0 412 626 834  
 Governor  
 Governor design. : RQ250/1000PA936  
 Governor no. : 0 421 801 507

Customer-spec. information  
 Customer : DAF

Engine : WS 295

1st version kW : 295.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.6...8.0  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0

1000 : (242.0...250.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70



Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 1000  
Rack travel in m: 13.90...14.10

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

##### Measurement

Speed 1/min : 600

#### 1st pressure hPa : -

Rack travel in m: 11.00...11.20

#### 2nd pressure hPa : 460

Rack travel in m: 13.00...13.10

#### 3rd pressure hPa : 310

Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

##### Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 171.0...173.0  
1000 s: (168.0...176.0)

#### BREAKAWAY

#### 1st version

K23

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...6.80

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 t 4  
Edition : 05.10.90  
Replaces : 5.1.90  
Test oil : ISO-4113

Combination no. : 0 402 646 897

Injection pump  
Pump designation : PE6P120A320LS7808  
EP type number : 0 412 626 816  
Governor  
Governor design. : RQ300/950PA762-10  
Governor no. : 0 421 801 511

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

100() : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1350

Speed rpm : 800  
Del.quantity cm3/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 t 5  
Edition : 05.10.90  
Replaces : 23.3.90  
Test oil : ISO-4113

Combination no. : 0 402 646 901

Injection pump  
Pump designation : PE6P120A320LS7808  
EP type number : 0 412 626 816  
Governor  
Governor design. : RQV300...950PA797-12  
Governor no. : 0 421 813 840

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.40

2nd speed rpm : 620  
travel mm : 5.00...5.40

3rd speed rpm : 780  
travel mm : 6.00...6.50

4th speed rpm : 1010  
travel mm : 8.30...8.80

5th speed rpm : 1100  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1040  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 214.0...216.0  
1000 : (211.0...219.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION  
Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

START CUT-OUT

K27

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 w  
Edition : 21.09.90  
Replaces : 6.7.90  
Test oil : ISO-4113

Combination no. : 0 402 646 902

Injection pump  
Pump designation : PE6P130A720RS7197  
EP type number : 0 412 636 815  
Governor  
Governor design. : RQV300...900PA946  
Governor no. : 0 421 813 845

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8210.42.151

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
(4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 25.5...25.8

100 s: (25.1...26.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.80...3.40

3rd speed rpm : 700

travel mm : 5.50...5.90

4th speed rpm : 900

travel mm : 7.70...7.90

5th speed rpm : 1200

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 935

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 255.0...258.0

1000 : (251.5...261.5)

Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 76...84

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 320...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 345  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 275  
Rack travel in m: 11.10...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 269.0...276.0  
1000 s: (269.0...276.0)  
Aneroid pressure h: -  
Speed rpm : 500

LQ1

Del.quantity cm3/ : 181.0...184.0  
1000 s: (177.5...187.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 940...950

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...270.0  
1000 s: (236.0...274.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm3 : 10.00  
1000 s: (14.00)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 t 7  
Edition : 05.10.90  
Replaces : 6.4.90  
Test oil : ISO-4113

Combination no. : 0 402 646 908

Injection pump  
Pump designation : PE6P120A320LS7808  
EP type number : 0 412 626 816  
Governor  
Governor design. : RQ300/950PA932-3  
Governor no. : 0 421 801 528

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Anne id pressure h: 900

Del quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0



Testing:

1st rack travel in: 13.80

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 5.70...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 11.00...11.20

2nd pressure hPa : 550

Rack travel in m: 13.10...13.30

3rd pressure hPa : 1100

Rack travel in m: 14.10...14.20

4th pressure hPa : 1200

Rack travel in m: 14.50...14.70

5th pressure hPa : -

Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350

Speed rpm : 950

Del.quantity cm3/ : 241.0...243.0

1000 s: (238.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1350

Speed rpm : 800

Del.quantity cm3/ : 237.0...241.0

1000 s: (234.0...244.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 205.0...225.0

1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 l  
Edition : 20.07.90  
Replaces : 6.7.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 912  
  
Injection pump  
Pump designation : PE6P120A320RS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQ250/1000PA936-1  
Governor no. : 0 421 801 508

Customer-spec. information  
Customer : DAF

Engine : WS 268

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.50...15.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.4...6.8

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550  
Rack travel in mm : 16.4

Testing:

1st rack travel in: 14.00  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 480  
Rack travel in m: 14.20...14.30  
3rd pressure hPa : 330  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 166.0...170.0  
1000 s: (164.0...172.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 g  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 914

Injection pump  
Pump designation : PE6P130A720RS7197  
EP type number : 0 412 636 815  
Governor  
Governor design. : RQ300/900PA968  
Governor no. : 0 421 801 540

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.153

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 25.5...25.8

100 s: (25.1...26.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 255.0...258.0

1000 : (251.5...261.5)

Spread cm3 : 6.00

1000 : (10.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50

Speed rpm : 945...960

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 600  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 345  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 275  
Rack travel in m: 11.10...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 269.0...276.0  
1000 s: (269.0...276.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 181.0...184.0  
1000 s: (177.5...187.5)

#### BREAKAWAY

L07

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 945...960

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm3 : 10.00  
1000 s: (14.00)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 1  
Edition : 31.08.90  
Replaces : 15.3.90  
Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA717  
Governor no. : 0 421 801 258

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 22.1...22.3  
100 s: (21.8...22.6)

Spread cm3 : 0.4  
100 s: (0.7)

2nd speed rpm : 300.0  
Rack travel in mm : 6.1...6.7  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.5  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm3 : 4.00  
1000 : (7.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 950  
Rack travel in m: 15.60...15.90  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm3/ : 246.0...250.0  
1000 s: (243.0...253.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 b  
Edition : 31.08.90  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 402 648 824

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQV300...1050PA797  
Governor no. : 0 421 813 532

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.20

5th speed rpm : 1150

travel mm : 9.00...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm3 : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90

3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm3/ : 246.0...250.0  
1000 s: (243.0...253.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 14.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 e 2  
Edition : 31.07.90  
Replaces : 8.6.90  
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350...1050PA842-7  
Governor no. : 0 421 813 874

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 21.2...21.4  
100 s: (20.9...21.7)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.80...1.20  
2nd speed rpm : 510  
travel mm : 3.60...4.10  
3rd speed rpm : 1100  
travel mm : 7.80...8.40  
4th speed rpm : 1270  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.60...15.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 11.20...11.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 227.0...230.0  
1000 s: (224.0...233.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 156.0...159.0 \*  
1000 s: (153.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 8  
 Edition : 20.07.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 841  
 Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQ300/1050PA762-5  
 Governor no. : 0 421 801 399

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.6  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm3 : 0.5  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 500  
 Aneroid pressure h: 650  
 Del.quantity : 204.0...206.0  
 1000 : (201.0...209.0)  
 Spread cm3 : 4.00  
 1000 : (7.00)

## RATED SPEED

1st version

Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.60...14.70 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 178.0...181.0  
1000 s: (175.0...184.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 q  
Edition : 31.07.90  
Replaces : 5.1.90  
Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQ300/950PA762-7  
Governor no. : 0 421 801 480

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 700  
Rack travel in m: 14.10...14.30  
3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1500  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 k 1  
Edition : 31.07.90  
Replaces : 6.7.90  
Test oil : ISO-4113

Combination no. : 0 402 648 881

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQV300...950PA797-13  
Governor no. : 0 421 813 841

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.9...6.5  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.40  
2nd speed rpm : 700  
travel mm : 5.50...6.00  
3rd speed rpm : 1100  
travel mm : 8.30...8.80  
4th speed rpm : 1090  
travel mm : 9.70...10.20  
5th speed rpm : 1190  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1000  
Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 600  
Aneroid pressure h : 1000  
Del.quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 14.20  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.30  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.00...12.20  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : -  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 14.20  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MTU 14,6 a1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 884  
 Injection pump  
 Pump designation : PE8P120A320LS7830  
 EP type number : 0 412 628 844  
 Governor  
 Governor design. : RQV350...1150PA870-  
 10  
 Governor no. : 0 421 815 879

Customer-spec. information  
 Customer : MTU

Engine : 8V 183 TE92

1st version kW : 490.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENT

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.50...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 31.1...31.3

100 s: (30.8...31.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.6  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.90...2.40  
 2nd speed rpm : 500  
 travel mm : 3.00...3.50  
 3rd speed rpm : 800  
 travel mm : 4.30...4.80  
 4th speed rpm : 1200  
 travel mm : 8.30...8.90  
 5th speed rpm : 1250  
 travel mm : 9.30...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 2000  
Del.quantity : 311.0...313.0  
1000 : (308.0...316.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 13.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

## CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.10...7.30

Measurement

Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 8.30...8.40  
2nd pressure hPa : 1200  
Rack travel in m: 12.50...12.80

## START CUT-OUT

Speed 1/min : 310 (330)

## FUEL DELIVERY CHARACTERISTICS

L21

1st version

Aneroid pressure h: 2000  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 2000  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 320.0...340.0  
1000 s: (316.0...344.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a23  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 892

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350...950PA866-7  
Governor no. : 0 421 813 882

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 266.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm3/ : 20.0...20.2  
100 s: (19.7...20.5)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.7...5.9  
Del. quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80  
2nd speed rpm : 424  
travel mm : 2.30...2.80  
3rd speed rpm : 700  
travel mm : 4.10...4.60  
4th speed rpm : 1008  
travel mm : 7.90...8.40  
5th speed rpm : 1220  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1025  
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del.quantity : 200.0...202.0  
1000 : (197.0...205.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 1.10  
2nd speed rpm : 950  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 900  
Rack travel in m: 13.50...13.60  
4th speed rpm : 800  
Rack travel in m: 14.30...14.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50

2nd pressure hPa : 375  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 900  
Rack travel in m: 14.10...14.20 \*

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm3/ : 190.0...193.0  
1000 s: (187.0...196.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 750  
Del.quantity cm3/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm3/ : 163.0...165.0 \*  
1000 s: (160.0...168.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

\* = Set at reduced-delivery stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 j  
Edition : 20.07.90  
Replaces : 19.6.90  
Test oil : ISO-4113

Combination no. : 0 402 649 811

Injection pump  
Pump designation : PE10P120A520LS7831  
EP type number : 0 412 629 806  
Governor  
Governor design. : RQ300/950PA950  
Governor no. : 0 421 801 520

Customer-spec. information  
Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
In n. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 13.00...14.00  
Firing order : 10- 9- 4- 1- 8- 7  
: 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.4  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950  
Aneroid pressure h: 1000  
Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 600  
Rack travel in m: 13.70...13.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 200  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 500  
Rack travel in m: 12.80...13.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 225.0...231.0  
1000 s: (222.0...234.0)  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 122.0...130.0  
1000 s: (119.0...133.0)  
Spread cm<sup>3</sup> : 12.00  
1000 s: (16.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 995...1010

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.40  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7014  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 10  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 c  
Edition : 31.07.90  
Replaces : 6.7.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 735 800  
  
Injection pump  
Pump designation : PES5P120A720/3LS7210  
EP type number : 0 412 725 808  
Governor  
Governor design. : RQV325...1000PA962K  
Governor no. : 0 421 815 246

Customer-spec. information  
Customer : MAN

Engine : D2865LF03

1st version kW : 235.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
& maximum rack tra: 15.0...16.0  
Difference ° CS : 1.75...3.25

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 7.70...7.90

2nd speed rpm : 325

travel mm : 2.10...2.30

3rd speed rpm : 500

travel mm : 4.10...4.50

4th speed rpm : 900

travel mm : 6.40...6.80

5th speed rpm : 1350

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 257.0...259.0  
1000 : (254.0...262.0)  
Spread cm3 : 6.00  
1000 : (10.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 283...291

### Testing:

1st rack travel in: 11.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 240...248

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 325  
Rack travel in mm : 6.00...6.20

### CONSTANT REGULATION

Speed rpm : 340...450

### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 1000  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 650  
Rack travel in m: 12.40...12.60  
4th speed rpm : 400  
Rack travel in m: 11.60...11.90

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

## Measurement

Speed 1/min : 900

### 1st pressure hPa : -

Rack travel in m: 9.00...9.20  
2nd pressure hPa : 170  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.10

## START CUT-OUT

Speed 1/min : 245 (265)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm3/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 259.0...265.0  
1000 s: (256.0...268.0)  
Speed rpm : 650  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Spread cm3 : 10.00  
1000 s: (14.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.90...6.30  
Del.quantity cm3/ : 47.0...53.0  
1000 s: (44.0...56.0)  
Spread cm3 : 10.00  
1000 s: (14.00)

Remarks:

: MAN-NR. 3-7048

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 t  
Edition : 16.08.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 805  
  
Injection pump  
Pump designation : PES6P120A12ORS7206  
EP type number : 0 412 726 835  
Governor  
Governor design. : RQV350..1100PA924-5K  
Governor no. : 0 421 815 250

Customer-spec. information  
Customer : CUMMINS

Engine : 6CTAA

1st version kW : 202.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 2 417 413 047

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 17...19

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100  
  
Rack travel in mm : 12.60...12.70  
  
Del.quantity cm<sup>3</sup>/ : 15.8...16.0  
100 s: (15.5...16.3)  
  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm<sup>3</sup>/ : 2.3...2.9  
100 s: (2.1...3.1)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.10...1.50  
2nd speed rpm : 550  
travel mm : 3.40...4.00  
3rd speed rpm : 900  
travel mm : 6.10...6.70  
4th speed rpm : 1150  
travel mm : 8.40...8.60  
5th speed rpm : 1250  
travel mm : 9.40...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1280  
Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200

Del.quantity : 158.0...160.0  
1000 : (155.0...163.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 600  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 800  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 600  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 300

M03

Rack travel in m: 9.20...9.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 105.0...109.0  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 235.0...255.0  
1000 s: (231.0...259.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (21.0...31.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### Remarks:

: C.D.C. # 3281182  
Start-of delivery mark/lock = 7.5°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w  
Edition : 08.08.90  
Replaces : 8.6.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 806  
  
Injection pump  
Pump designation : PES6P110A12ORS7213  
EP type number : 0 412 716 804  
Governor  
Governor design. : RQV400...1250PA964-K  
Governor no. : 0 421 815 252

Customer-spec. information  
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.5  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.50...15.60

Del.quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 3.3...3.7

100 s: (3.1...3.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 0.70...1.10

2nd speed rpm : 400

travel mm : 1.40...1.60

3rd speed rpm : 600

travel mm : 2.90...3.30

4th speed rpm : 1300

travel mm : 7.20...7.40

5th speed rpm : 1500

travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 165.5...167.5

1000 : (163.5...169.5)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 14.50  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 15.50...15.60  
2nd speed rpm : 800  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 700  
Rack travel in m: 13.80...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 15.50...15.60

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 400  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 800  
Rack travel in m: 13.40...13.80

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm3/ : 177.0...181.0  
1000 s: (175.0...183.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 82.5...86.5  
1000 s: (80.5...88.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 33.0...37.0  
1000 s: (31.0...39.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3913440  
Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r  
Edition : 05.10.90  
Replaces : 8.6.90  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 807  
  
Injection pump  
Pump designation : PES6P110A12ORS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1100PA964-1  
K  
Governor no. : 0 421 815 253

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.4...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 2.8...3.2

100 s: (2.6...3.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 600  
travel mm : 5.10...5.50

4th speed rpm : 1000  
travel mm : 8.10...8.30

5th speed rpm : 1200  
travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (204.0...210.0)



Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 14.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.70...15.80  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.90  
3rd speed rpm : 1100  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1050  
Pressure hPa : 1500  
Rack travel mm : 15.70...15.80

Measurement  
Speed 1/min : 1050

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 340  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 840  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm3/ : 198.5...202.5  
1000 s: (196.5...204.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 98.0...102.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 11.40...12.40

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3916627

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w 1  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 810  
 Injection pump  
 Pump designation : PES6P110A12ORS7213  
 EP type number : 0 412 716 804  
 Governor  
 Governor design. : RQV400...1250PA964-2  
 K  
 Governor no. : 0 421 815 254

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 15.9...16.1

100 s: (15.7...16.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 3.3...3.7

100 s: (3.1...3.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 0.70...1.10

2nd speed rpm : 400

travel mm : 1.40...1.60

3rd speed rpm : 600

travel mm : 2.90...3.30

4th speed rpm : 1300

travel mm : 7.20...7.40

5th speed rpm : 1500

travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 159.0...161.0

1000 : (157.0...163.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 800  
Rack travel in m: 13.00...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 14.80...14.90

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 415  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 740  
Rack travel in m: 13.00...13.40

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm3/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 95.5...99.5  
1000 s: (93.5...101.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 33.0...37.0  
1000 s: (31.0...39.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : C.D.C. # 3919090

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 1  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 814  
 Injection pump  
 Pump designation : PES6P110A120RS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964-6  
 K  
 Governor no. : 0 421 815 258

Customer spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 18.3...18.5

100 s: (18.1...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm3/ : 2.8...3.2  
 100 s: (2.6...3.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00  
 2nd speed rpm : 450  
 travel mm : 3.10...3.50  
 3rd speed rpm : 700  
 travel mm : 5.90...6.30  
 4th speed rpm : 1200  
 travel mm : 9.00...9.20  
 5th speed rpm : 1400  
 travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1200  
 Del.quantity : 183.0...185.0  
 1000 : (181.0...187.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 11.60...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 270  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 700  
Rack travel in m: 12.60...13.00

#### START CUT-OUT

Speed 1/min : 265 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 168.5...172.5  
1000 s: (166.5...174.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 2  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 736 816

Injection pump  
 Pump designation : PES6P110A120RS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964-8  
 K  
 Governor no. : 0 421 815 264

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 14.70...14.80

---

Del.quantity cm3/ : 19.0...19.2

---

100 s: (18.8...19.4)

---

Spread cm3 : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 350.0

---

Rack travel in mm : 5.6...5.8

---

Del.quantity cm3/ : 2.8...3.2

---

100 s: (2.6...3.4)

---

Spread cm3 : 0.8

---

100 s: (1.2)

---

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00

2nd speed rpm : 450  
 travel mm : 3.10...3.50

3rd speed rpm : 700  
 travel mm : 5.90...6.30

4th speed rpm : 1200  
 travel mm : 9.00...9.20

5th speed rpm : 1400  
 travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del.quantity : 190.0...192.0  
 1000 : (188.0...194.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 650  
Rack travel in m: 12.50...12.90  
3rd speed rpm : 1200  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.80

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 260  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 710  
Rack travel in m: 12.80...13.20

#### START CUT-OUT

Speed 1/min : 265 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 182.0...186.0  
1000 s: (180.0...188.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm3/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C # 3916626

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 d  
Edition : 31.07.90  
Replaces : 7.2.89  
Test oil : ISO-4113

Combination no. : 0 402 746 835

Injection pump  
Pump designation : PES6P120A320RS7156  
EP type number : 0 412 726 813  
Governor  
Governor design. : RQV250...1050PA793-2  
Governor no. : 0 421 813 699

Customer-spec. information  
Customer : PERKINS

Engine : EAGLE TX 350/375

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.30

2nd speed rpm : 350  
travel mm : 2.90...3.50

3rd speed rpm : 700  
travel mm : 4.00...4.60

4th speed rpm : 1000  
travel mm : 7.40...7.60

5th speed rpm : 1100  
travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200



Del.quantity : 277.0...279.0  
1000 : (274.0...282.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 13.20  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...570

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 850  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 610  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### BREAKAWAY

1st version

M15

1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 k 1  
Edition : 05.10.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 863  
  
Injection pump  
Pump designation : PES6P120A720RS7179  
EP type number : 0 412 726 826  
Governor  
Governor design. : RQV350..1150PA917K  
Governor no. : 0 421 815 214

Customer-spec. information  
Customer : FNH

Engine : 7.8L

1st version kW : 201.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 2 417 413 072

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

2nd speed rpm : 350.0  
Rack travel in mm : 5.0...5.4  
Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
100 s: (1.8...2.8)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1215  
travel mm : 9.40...9.60  
2nd speed rpm : 350  
travel mm : 2.20...2.40  
3rd speed rpm : 450  
travel mm : 3.40...4.00  
4th speed rpm : 800  
travel mm : 6.10...6.50  
5th speed rpm : 1550  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1380  
Rack travel in mm : 6.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150

Aneroid pressure h: 1400  
Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm<sup>3</sup> : 7.00  
1000 : (11.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 64...72

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 350  
Rack travel in mm : 5.00...5.40

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 550  
Rack travel in m: 11.30...11.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1150  
Pressure hPa : 1400  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 1150

1st pressure hPa : -  
Rack travel in m: 7.90...8.30  
2nd pressure hPa : 300  
Rack travel in m: 9.50...9.60

3rd pressure hPa : 850  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 212.0...218.0  
1000 s: (209.0...221.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...180.0  
1000 s: (145.0...185.0)  
Rack travel in mm : 10.90...11.50

Remarks:

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 11,1 e6  
 Edition : 02.05.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 869

Injection pump  
 Pump designation : PES6P120A720RS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-29  
 K  
 Governor no. : 0 421 815 220

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EMC6 250L 4VH

1st version kW : 196.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 18.4...18.6

100 s: (18.2...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm3/ : 3.9...4.5  
 100 s: (3.7...4.7)

Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 2.80...3.20  
 3rd speed rpm : 850  
 travel mm : 6.20...6.40  
 4th speed rpm : 1000  
 travel mm : 7.70...7.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 900  
 Del.quantity : 184.0...186.0  
 1000 : (182.0...188.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

### Testing:

1st rack travel in: 12.00  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18

### Testing:

Speed rpm : 275  
Minimum rack travel: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 510  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 650  
Rack travel in m: 13.90...14.20  
4th speed rpm : 450  
Rack travel in m: 0.00...14.70

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 14.90...15.10

## Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 10.40...10.80  
2nd pressure hPa : 205  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 460  
Rack travel in m: 13.90...14.30

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm3/ : 252.0...258.0  
1000 s: (250.0...260.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 900  
Speed rpm : 875  
Del.quantity cm3/ : 179.0...181.0 \*  
1000 s: (151.0...173.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (150.0...158.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 10.40...10.80

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5181P4

Delivery-valve spring pre-tension  
3.0...3.2 mm.

\* This test specification applies only  
to the engine/nozzle-and-holder  
assemblies on an injection-pump test  
bench: setting for test equipment,  
check value for engine equipment.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 c3  
Edition : 02.05.90  
Replaces : 28.9.89  
Test oil : ISO-4113

Combination no. : 0 402 746 876

Injection pump  
Pump designation : PES6P120A720RS7157  
EP type number : 0 412 726 814  
Governor  
Governor design. : RQV325...850PA929-3K  
Governor no. : 0 421 815 232

Customer-spec. information  
Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40

2nd speed rpm : 450  
travel mm : 2.80...3.20

3rd speed rpm : 650  
travel mm : 5.60...5.80

4th speed rpm : 900  
travel mm : 8.30...8.50

5th speed rpm : 1100  
travel mm : 10.30...10.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0

1000 : (202.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 11.20  
Speed rpm : 890...900  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 500  
Rack travel in m: 0.00...11.10

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 12.50...12.70

### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 265  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 565  
Rack travel in m: 11.20...11.60

## START CUT-OUT

Speed 1/min : 275 (285)

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## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 241.0...247.0  
1000 s: (239.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 850  
Del.quantity cm3/ : 159.0...161.0 \*  
1000 s: (136.5...157.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 148.0...152.0  
1000 s: (146.0...154.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 890...900

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.00...10.60

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

### Remarks:

: MACK # 313GC5185-P22

\* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 12,2 f1  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 882

Injection pump  
Pump designation : PES6P120A32ORS7156-1  
EP type number : 0 412 726 830  
Governor  
Governor design. : RQV350..1050PA941-1  
Governor no. : 0 421 813 887

Customer-spec. information  
Customer : PERKINS

Engine : 2006 TW-H

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 26.9...27.1

100 s: (26.6...27.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.3...8.5

Del.quantity cm3/ : 6.3...6.9

100 s: (6.1...7.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.80...1.20

2nd speed rpm : 420  
travel mm : 3.60...4.20

3rd speed rpm : 700  
travel mm : 4.70...5.30

4th speed rpm : 1120  
travel mm : 5.50...5.70

5th speed rpm : 1250  
travel mm : 8.70...9.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 269.0...271.0

1000 : (266.0...274.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 98...106

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78

#### Testing:

Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 350  
Rack travel in mm : 8.30...8.50

#### CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 710  
Rack travel in m: 13.10...13.20  
3rd pressure hPa : 560  
Rack travel in m: 11.80...12.00

#### START CUT-OUT

Speed 1/min : 300 (320)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 275.0...281.0  
1000 s: (272.0...284.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 182.0...184.0  
1000 s: (179.0...187.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...225.0  
1000 s: (181.0...229.0)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 h  
Edition : 28.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 883  
  
Injection pump  
Pump designation : PES6P110A32ORS7198  
EP type number : 0 412 716 802  
Governor  
Governor design. : RQV275...1250PA942K  
Governor no. : 0 421 815 234

Customer-spec. information  
Customer : RVI

Engine : MIDR06-06-26

1st version kW : 132.5  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70  
: (4.55...4.75)  
Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...15.00  
& maximum rack tra: 20.0...21.0  
Difference ° CS : 2.50...4.00

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.70...9.90

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 600

travel mm : 4.20...4.60

4th speed rpm : 1000

travel mm : 7.10...7.50

5th speed rpm : 1600

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1370

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 1000  
Del.quantity : 153.0...155.0  
1000 : (150.5...157.5)  
Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 58...66

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 275  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 350...480

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 400  
Rack travel in m: 12.80...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 11.20...11.60

2nd pressure hPa : 360  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 220  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 119.0...123.0  
1000 s: (116.0...126.0)  
Aneroid pressure h: -  
Speed rpm : 750  
Del.quantity cm3/ : 54.0...64.0  
1000 s: (51.0...67.0)  
Spread cm3 : 8.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 750  
Del.quantity cm3/ : 34.0...44.0  
1000 s: (31.0...47.0)  
Spread cm3 : 8.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.0...69.0  
1000 s: (64.5...71.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1315...1325

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...115.0  
1000 s: (81.0...119.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -9.10...-9.50  
Del.quantity cm3/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h3  
Edition : 05.10.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 887  
  
Injection pump  
Pump designation : PES6P120A720RS7200  
EP type number : 0 412 726 833  
Governor  
Governor design. : 325...975PA944-2K  
Governor no. : 0 21 815 237

Customer-spec. information  
Customer : MACK TRUCKS

Engine : E7-300A

1st version kW : 224.0  
Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 11.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.3...22.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 4.8...5.0  
Del.quantity cm<sup>3</sup>/ : 4.0...4.6  
100 s: (3.8...4.8)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 2.80...3.20  
3rd speed rpm : 950  
travel mm : 7.90...8.10  
4th speed rpm : 1200  
travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 975  
Aneroid pressure h: 1200  
Del.quantity : 225.0...227.0  
1000 : (223.0...229.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 600  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 500  
Rack travel in m: 11.30...11.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 7.90...8.30  
2nd pressure hPa : 325  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 640  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

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1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 241.5...245.5  
1000 s: (239.5...247.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 149.0...153.0  
1000 s: (147.0...155.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MACK # 313GC5188-P8

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h4  
Edition : 17.09.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 891  
Injection pump  
Pump designation : PES6P120A72ORS7200  
EP type number : 0 412 726 833  
Governor  
Governor design. : RQV325...875PA944-6K  
Governor no. : 0 421 815 241

Customer-spec. information  
Customer : MACK TRUCKS

Engine : EM7-250

1st version kW : 187.0  
Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 11.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 21.5...21.7

100 s: (21.3...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 4.8...5.0  
Del.quantity cm3/ : 4.0...4.6  
100 s: (3.8...4.8)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 3.30...3.70  
3rd speed rpm : 700  
travel mm : 7.90...8.30  
4th speed rpm : 900  
travel mm : 9.40...9.60  
5th speed rpm : 1050  
travel mm : 10.60...11.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 875  
Aneroid pressure h: 1200  
Del.quantity : 215.0...217.0  
1000 : (213.0...219.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.50  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 510  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 600  
Rack travel in m: 13.40...13.60  
4th speed rpm : 450  
Rack travel in m: 12.70...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.60

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.60...9.00  
2nd pressure hPa : 285  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.10...12.50

START CUT-OUT

NO2

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 292.5...296.5  
1000 s: (290.5...298.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 153.0...157.0  
1000 s: (151.0...159.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P2

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h5  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 892  
 Injection pump  
 Pump designation : PES6P120A72ORS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...975PA944-7K  
 Governor no. : 0 421 815 242

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-250A

1st version kW : 180.0  
 Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 20.5...20.7

100 s: (20.3...20.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm<sup>3</sup>/ : 4.0...4.6  
 100 s: (3.8...4.8)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60  
 2nd speed rpm : 450  
 travel mm : 2.80...3.20  
 3rd speed rpm : 950  
 travel mm : 7.90...8.10  
 4th speed rpm : 1200  
 travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 975  
 Aneroid pressure h: 1200  
 Del.quantity : 205.5...207.5  
 1000 : (203.5...209.5)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 600  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 800  
Rack travel in m: 12.40...12.60  
4th speed rpm : 500  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 8.80...9.20  
2nd pressure hPa : 340  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 600  
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 250 (255)

N04

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (232.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 157.5...161.5  
1000 s: (155.5...163.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1015...1025

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: MACK # 313GC5188-P6

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 l  
Edition : 28.09.90  
Replaces : 6.7.90  
Test oil : ISO-4113

Combination no. : 0 402 746 893

Injection pump  
Pump designation : PES6P120A320RS7201  
EP type number : 0 412 726 834  
Governor  
Governor design. : RQV275...1000PA948  
Governor no. : 0 421 813 852

Customer-spec. information  
Customer : RVI

Engine : MIDR 062045Q

1st version kW : 176.5  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.95)  
Rack travel in mm : 12.50...13.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 12.50...13.50  
& maximum rack tra: 20.0...21.0  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8

Del.quantity cm3/ : 3.1...3.7

100 s: (2.8...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1000

travel mm : 7.60...7.80

2nd speed rpm : 275

travel mm : 1.10...1.80

3rd speed rpm : 500

travel mm : 3.70...4.10

4th speed rpm : 770

travel mm : 5.90...6.30

5th speed rpm : 1400

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 900  
Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 244...252

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.90  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION  
Speed rpm : 310...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...11.00  
2nd pressure hPa : 560  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 240  
Rack travel in m: 11.50...11.90

#### START CUT-OUT

Speed 1/min : 225 (245)

#### FUEL DELIVERY CHARACTERISTICS

NO6

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 239.0...245.0  
1000 s: (236.0...248.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 92.0...102.0  
1000 s: (89.0...105.0)  
Spread cm3 : 10.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -8.10... -8.50  
Del.quantity cm3/ : 31.0...37.0  
1000 s: (28.0...40.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 i  
Edition : 28.09.90  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 894  
Injection pump  
Pump designation : PES6P110A320RS7208  
EP type number : 0 412 716 803  
Governor  
Governor design. : RQV275...1175PA942-1  
K  
Governor no. : 0 421 815 244

Customer-spec. information  
Customer : RVI

Engine : MIDR060226 M

1st version kW : 210.0  
Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20  
: (4.05...4.25)

Rack travel in mm : 13.00...14.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10  
& maximum rack tra: 20.0...21.0  
Difference ° CS : 2.75...4.25

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.70...9.90

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 600

travel mm : 4.20...4.60

4th speed rpm : 1000

travel mm : 7.10...7.50

5th speed rpm : 1600

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1370

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1175  
 Aneroid pressure h : 1000  
 Del.quantity : 171.0...173.0  
     1000 : (168.5...175.5)  
 Spread cm3 : 4.00  
     1000 : (7.50)

#### RATED SPEED

1st version  
 Control Lever  
   position degrees: 110...118

Testing:  
 1st rack travel in: 13.00  
   Speed rpm : 1245...1255  
 2nd rack travel in: 4.00  
   Speed rpm : 1420...1450  
 4th rack travel in: 1600  
   Speed rpm : 0.00...1.00

LOW IDLE 1  
 Control Lever  
   position degrees: 56...64

Testing:  
 Speed rpm : 200  
 Minimum rack trave: 5.70  
 Speed rpm : 275  
 Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
 Speed rpm : 350...480

TORQUE CONTROL  
 Dimension a mm : ?  
 Torque control curve - 1st version  
 1st speed rpm : 1175  
   Rack travel in m: 14.00...14.10  
 2nd speed rpm : 700  
   Rack travel in m: 13.20...13.40  
 3rd speed rpm : 400  
   Rack travel in m: 12.40...12.80

Aneroid/Altitude  
 Compensator Test

1st version  
 Setting  
 Speed rpm : 1175  
 Pressure hPa : 1000  
 Rack travel mm : 14.00...14.10

Measurement  
 Speed 1/min : 1175

1st pressure hPa : -

N08

Rack travel in m: 10.10...10.50  
 2nd pressure hPa : 520  
 Rack travel in m: 12.30...12.40  
 3rd pressure hPa : 240  
 Rack travel in m: 10.90...11.30

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
 Aneroid pressure h: 1000  
 Speed rpm : 700  
 Del.quantity cm3/ : 147.0...153.0  
     1000 s: (144.0...156.0)  
 Aneroid pressure h: -  
 Speed rpm : 700  
 Del.quantity cm3/ : 50.0...60.0  
     1000 s: (47.0...63.0)  
 Spread cm3 : 8.00  
     1000 s: (-)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 69.0...71.0  
     1000 s: (66.5...73.5)

#### BREAKAWAY

1st version  
 1mm rack travel less than  
   full load rack tr: 13.00  
 Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 85.0...115.0  
     1000 s: (81.0...119.0)

#### LOW IDLE

Speed rpm : 275  
 Rack travel in mm : -8.80...-9.20  
 Del.quantity cm3/ : 18.0...23.0  
     1000 s: (15.5...25.5)  
 Spread cm3 : 4.50  
     1000 s: (7.50)

Remarks:

Setting and blocking of pointer of  
 start-of-delivery sensor on cyl. 1  
 start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h2  
Edition : 17.09.90  
Replaces : 8.8.90  
Test oil : ISO-4113

Combination no. : 0 402 746 896

Injection pump  
Pump designation : PES6P120A720RS7200  
EP type number : 0 412 726 833  
Governor  
Governor design. : RQV325...900PA944-11  
K

Governor no. : 0 421 815 260

Customer-spec. information  
Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

N10

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 11.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
Rack travel in mm : 14.50...14.60  
Del.quantity cm3/ : 27.7...27.9  
100 s: (27.5...28.1)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 4.8...5.0  
Del.quantity cm3/ : 4.0...4.6  
100 s: (3.8...4.8)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

GUIDE SLEEVE TRAVEL  
1st speed rpm : 325  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 2.80...3.20  
3rd speed rpm : 700  
travel mm : 6.00...6.40  
4th speed rpm : 900  
travel mm : 8.50...8.70  
5th speed rpm : 1050  
travel mm : 9.80...10.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 277.5...279.5  
1000 : (275.5...281.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

### Testing:

1st rack travel in: 13.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 625  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.20  
4th speed rpm : 675  
Rack travel in m: 13.60...13.80  
5th speed rpm : 500  
Rack travel in m: 11.90...12.30

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 400  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 775

N11

Rack travel in m: 12.70...13.10

## START CUT-OUT

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm3/ : 290.0...296.0  
1000 s: (288.0...298.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 150.0...154.0  
1000 s: (148.0...156.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5188-P12

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

## Bow dimension:

Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h1  
 Edition : 05.10.90  
 Replaces : 8.8.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 897  
 Injection pump  
 Pump designation : PES6P120A720RS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...875PA944-12  
 K  
 Governor no. : 0 421 815 261

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EM7-300  
 1st version kW : 224.0

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.0...25.2

100 s: (24.8...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60

2nd speed rpm : 450  
 travel mm : 3.30...3.70

3rd speed rpm : 700  
 travel mm : 7.90...8.30

4th speed rpm : 900  
 travel mm : 9.40...9.60

5th speed rpm : 1050  
 travel mm : 10.60...11.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 250.0...252.0

1000 : (248.0...254.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 13.00  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 5.10...5.50

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 510  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 575  
Rack travel in m: 14.70...14.90  
4th speed rpm : 450  
Rack travel in m: 13.80...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 370  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 760  
Rack travel in m: 13.30...13.70

## START CUT-OUT

N13

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 328.0...334.0  
1000 s: (326.0...336.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 156.0...160.0  
1000 s: (154.0...162.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.50  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5188-P10

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 c 4  
Edition : 17.09.90  
Replaces : 12.1.90  
Test oil : ISO-4113

Combination no. : 0 402 776 807

Injection pump  
Pump designation : PES6P120A720LS7120-2  
EP type number : 0 412 726 832  
Governor  
Governor design. : RSV350...1050POA529  
-3  
Governor no. : 0 421 83J 332

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.6...5.8  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 94...106

Testing:

1st rack travel in: 12.40  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 13.40...13.60  
2nd speed rpm : 950  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 875  
Rack travel in m: 14.50...14.70  
4th speed rpm : 750  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 850  
Rack travel in m: 14.30...14.50  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

N15

Aneroid pressure h: 1200  
Speed rpm : 1030  
Del.quantity cm3/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 219.0...224.0  
1000 s: (216.0...227.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P20  
Edition : 21.06.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1250 R359  
Type number : 0 460 424 054

Customer-specific information  
Customer : CUM

Engine : 48TA

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 0.35

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840.0

Start of delivery block  
Piston stroke mm: 1.25  
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 5.1...6.1

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 83.0...84.0  
Dispersion cm3/ : 4.0  
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 53.0...54.0

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 10.0...12.0  
Dispersion cm3/ : 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H: 68.0...74.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 80.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400  
TD travel mm: 2.9...3.9  
mm: (2.9...3.9)

2nd speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 0.9...1.7  
mm: (0.6...2.0)

3rd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: 2.0...2.4  
mm: (1.5...2.9)

4th speed 1/min: 1250  
Charge press. hPa: 1000

TD travel mm: 2.8...3.6  
mm: (2.5...3.9)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.6...3.2  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.9...5.5  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.3...6.2  
4th speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.0...6.6

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 535  
Del.quantity cm<sup>3</sup>/: 71.5...72.5  
1000H.: (68.0...76.0)  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1430  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 68.0...74.0  
1000H.: (65.0...77.0)  
5th speed 1/min: 1250  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)  
6th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 77.5...80.5  
1000H.: (75.5...82.5)  
7th speed 1/min: 850

Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 83.0...84.0  
1000H.: (80.5...86.5)  
8th speed 1/min: 700  
Charge press. hPa: 535  
Del.quantity cm<sup>3</sup>/: 71.5...72.5  
1000H.: (68.0...76.0)  
9th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 53.0...54.0  
1000H.: (49.5...57.5)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0...3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 10...12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...2.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 80.0

2nd speed 1/min: 250  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 40.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

#### Mounting and assembly dimensions:

#### Designation

K	mm	: 3.7
MS	mm	: 0.8...1.2
SVS max.	mm	: 2.1
XK	mm	: 21.8...23.8
XL	mm	: 11.3...14.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P25  
Edition : 21.06.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1150 R378  
Type number : 0 460 424 058  
Customer Part-No. : 3 917 508

Customer-specific information  
Customer : CUM

Engine : 4BT 3.9 IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840.0

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.8  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 67.0...68.0  
Dispersion cm<sup>3</sup>/: 4.0  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/: 5.5  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/  
1000H: 47.0...53.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1.8...2.6  
mm: (0.5...1.9)  
2nd speed 1/min: 900  
TD travel mm: 2.0...2.4  
mm: (1.5...2.9)  
3rd speed 1/min: 1150  
TD travel mm: 3.2...4.0  
mm: (2.9...4.3)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.5...3.1  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.2...4.8  
3rd speed 1/min: 1150



Supply-pump  
pressure bar: 5.2...5.8

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1150  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
2nd speed 1/min: 1220  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
3rd speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)  
4th speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 63.5...66.5  
1000H.: (62.0...68.0)  
5th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 67.0...68.0  
1000H.: (64.5...70.5)  
6th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 69.5...73.5  
1000H.: (67.5...75.5)  
7th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 68.0...76.0  
1000H.: (66.0...78.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 0...3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 80.0

2nd speed 1/min: 240  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 80.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.1...1.3  
SVS max. mm : 4.0

Remarks:

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N20  
Edition : 24.10.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1150 R378  
Type number : 0 460 424 058

Customer-specific information  
Customer : CDC

Engine : 4 BT - 3.9 IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm : 1.8  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min : 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 67.0...68.0  
Dispersion cm<sup>3</sup>/  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/  
1000H.: 47.0...53.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 0.8...1.6  
mm: (0.5...1.9)  
2nd speed 1/min: 900  
TD travel mm: 2.0...2.4  
mm: (1.5...2.9)  
3rd speed 1/min: 1150  
TD travel mm: 3.2...4.0  
mm: (2.9...4.3)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.5...3.1  
bar: (2.3...3.3)  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.2...4.8  
bar: (4.0...5.0)

3rd speed 1/min: 1150  
Supply-pump pressure bar: 5.2...5.8  
bar: (5.0...6.0)

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1150  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: (0.0...3.0)  
2nd speed 1/min: 1220  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: (15.0...55.0)  
3rd speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)  
4th speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 63.5...66.5  
1000H.: (62.0...68.0)  
5th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 67.0...68.0  
1000H.: (64.5...70.5)  
6th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 69.5...73.5  
1000H.: (67.5...77.5)  
7th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 68.0...76.0  
1000H.: (66.0...78.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 500

Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: (0.0...4.0)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 80.0

2nd speed 1/min: 240  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 80.0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5.0...5.4
MS	mm	:	1.1...1.5
SVS max.	mm	:	4.0

Remarks:

: C.D.C. # 391 7507

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P31  
Edition : 22.06.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1050 R389  
Type number : 0 460 424 065  
Customer Part-No. : 3 917 517

Customer-specific information  
Customer : CUM

Engine : 4BT-390 AUTOM.

Power k: 78  
Speed 1/mi: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840.0

Start of delivery  
Prestroke mm : 0.2  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.0  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value mm: 3.4...3.8

## Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 5.0...5.6

## Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 89.5...90.5  
Dispersion cm<sup>3</sup> / : 4.0  
1000H.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 63.5...64.5

## Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup> / : 5.5  
1000H.: (7.0)

## Full-load speed regulation:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 59.0...65.0

## Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 1.7...2.5  
mm: (1.4...2.8)  
2nd speed 1/min: 750  
Charge press. hPa: 1000

TD travel mm: 3.4...3.8  
mm: (2.9...4.3)  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
TD travel mm: 4.7...5.5  
mm: (4.4...5.8)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.9...4.5  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.0...5.6  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.3...6.9

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 350  
Del.quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.0...84.0)  
2nd speed 1/min: 1180  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1120  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 59.0...65.0  
1000H.: (56.0...68.0)  
5th speed 1/min: 1050  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)  
6th speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 89.5...90.5  
1000H.: (87.0...93.0)  
7th speed 1/min: 700

Charge press. hPa: 350  
Del.quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.0...84.0)  
8th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 63.5...64.5  
1000H.: (60.0...68.0)

#### Zero delivery (stop):

##### Mech. shutoff:

Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

##### Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 60.0  
2nd speed 1/min: 230  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 60.0

#### Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

#### Mounting and assembly dimensions:

##### Designation

K mm : -  
KF mm : 5.6...6.0  
MS mm : 0.9...1.3  
SVS max. mm : 2.2

#### Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket